SERVICE MANUAL

X170SM



Notebook Computer

X170SM

Service Manual

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About this Manual

This manual is intended for service personnel who have completed sufficient training to undertake the maintenance and inspection of personal computers.

It is organized to allow you to look up basic information for servicing and/or upgrading components of the ***X170SM*** series notebook PC.

The following information is included:

Chapter 1, Introduction, provides general information about the location of system elements and their specifications.
Chapter 2, Disassembly, provides step-by-step instructions for disassembling parts and subsystems and how to upgrade elements of the system.

Appendix A, Part Lists
Appendix B, Schematic Diagrams

IMPORTANT SAFETY INSTRUCTIONS

Follow basic safety precautions, including those listed below, to reduce the risk of fire, electric shock and injury to persons when using any electrical equipment:

1. Do not use this product near water, for example near a bath tub, wash bowl, kitchen sink or laundry tub, in a wet basement or near a swimming pool.
2. Avoid using a telephone (other than a cordless type) during an electrical storm. There may be a remote risk of electrical shock from lightning.
3. Do not use the telephone to report a gas leak in the vicinity of the leak.
4. Use only the power cord and batteries indicated in this manual. Do not dispose of batteries in a fire. They may explode. Check with local codes for possible special disposal instructions.
5. This product is intended to be supplied by a Listed Power Unit as follows:

- AC Input of 100 - 240V, 50 - 60Hz, DC Output of 20V, 14A x 2 (**280** Watts) minimum AC/DC Adapter.

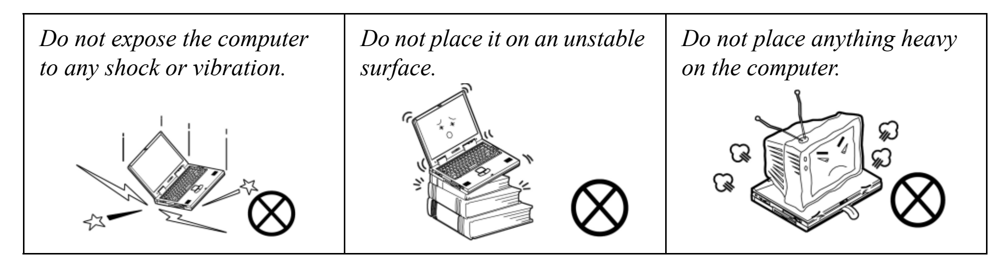
FCC Statement

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:
This device may not cause harmful interference.
This device must accept any interference received, including interference that may cause undesired operation.

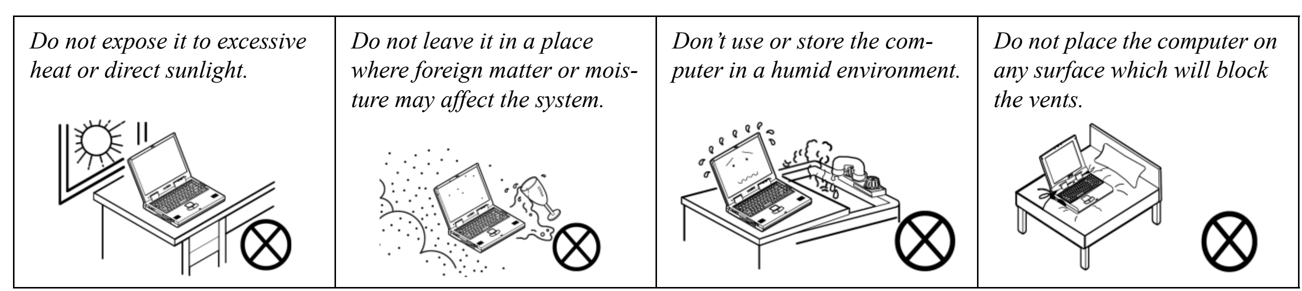
Instructions for Care and Operation

The notebook computer is quite rugged, but it can be damaged. To prevent this, follow these suggestions:

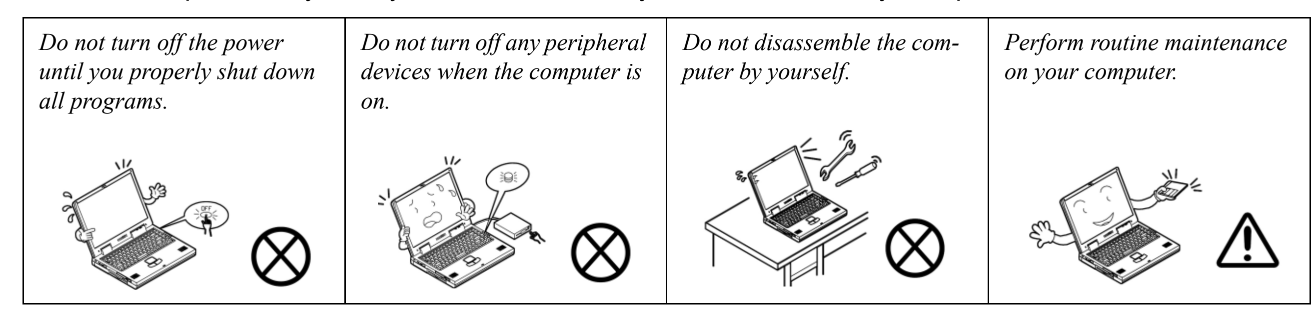
1. **Don’t drop it, or expose it to shock.** If the computer falls, the case and the components could be damaged.



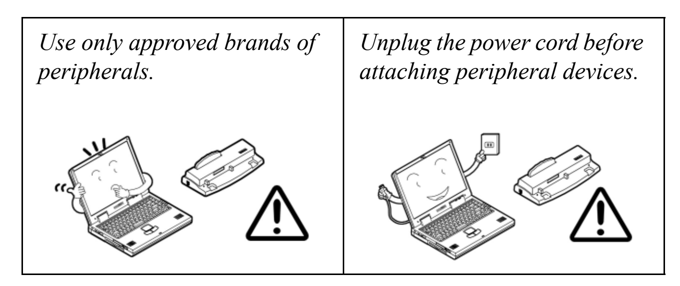
2. **Keep it dry, and don’t overheat it.** Keep the computer and power supply away from any kind of heating element. This is an electrical appliance. If water or any other liquid gets into it, the computer could be badly damaged.



3. **Follow the proper working procedures for the computer**. Shut the computer down properly and don’t forget to save your work. Remember to periodically save your data as data may be lost if the battery is depleted.



4. **Avoid interference.** Keep the computer away from high capacity transformers, electric motors, and other strong magnetic fields. These can hinder proper performance and damage your data.
5. **Take care when using peripheral devices**.





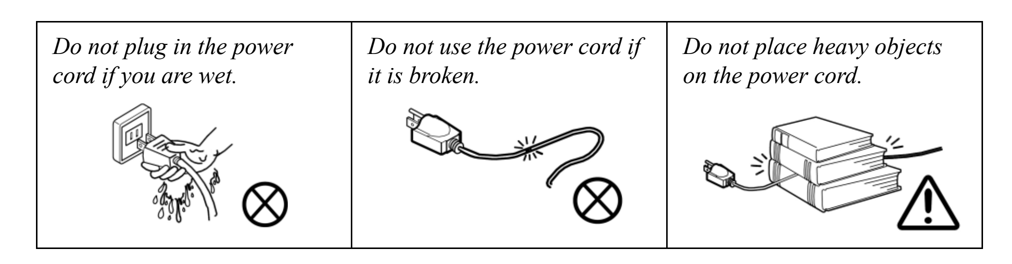
Power Safety Warning

Before you undertake any upgrade procedures, make sure that you have turned off the power, and disconnected all peripherals and cables (including telephone lines and power cord). It is advisable to also remove your battery in order to prevent accidentally turning the machine on.

Power Safety

The computer has specific power requirements:

- Only use a power adapter approved for use with this computer.
- Your AC adapter may be designed for international travel but it still requires a steady, uninterrupted power supply. If you are unsure of your local power specifications, consult your service representative or local power company.
- The power adapter may have either a 2-prong or a 3-prong grounded plug. The third prong is an important safety feature; do not defeat its purpose. If you do not have access to a compatible outlet, have a qualified electrician install one.
- When you want to unplug the power cord, be sure to disconnect it by the plug head, not by its wire.
- Make sure the socket and any extension cord(s) you use can support the total current load of all the connected devices.
- Before cleaning the computer, make sure it is disconnected from any external power supplies.



Battery Precautions

- Only use batteries designed for this computer. The wrong battery type may explode, leak or damage the computer.
- Do not continue to use a battery that has been dropped, or that appears damaged (e.g. bent or twisted) in any way. Even if the computer continues to work with a damaged battery in place, it may cause circuit damage, which may possibly result in fire.
- Recharge the batteries using the notebook's system. Incorrect recharging may make the battery explode.
- Do not try to repair a battery pack. Refer any battery pack repair or replacement to your service representative or qualified service personnel.
- Keep children away from, and promptly dispose of a damaged battery. Always dispose of batteries carefully. Batteries may explode or leak if exposed to fire, or improperly handled or discarded.
- Keep the battery away from metal appliances.
- Affix tape to the battery contacts before disposing of the battery.
- Do not touch the battery contacts with your hands or metal objects.

Battery Guidelines

The following can also apply to any backup batteries you may have.

- If you do not use the battery for an extended period, then remove the battery from the computer for storage.
- Before removing the battery for storage charge it to 60% - 70%.
- Check stored batteries at least every 3 months and charge them to 60% - 70%.



Battery Disposal

The product that you have purchased contains a rechargeable battery. The battery is recyclable. At the end of its useful life, under various state and local laws, it may be illegal to dispose of this battery into the municipal waste stream. Check with your local solid waste officials for details in your area for recycling options or proper disposal.

Caution

Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Discard used battery according to the manufacturer's instructions.

Battery Level

Click the battery icon in the taskbar to see the current battery level and charge status. A battery that drops below a level of 10% will not allow the computer to boot up. Make sure that any battery that drops below 10% is recharged within one week.

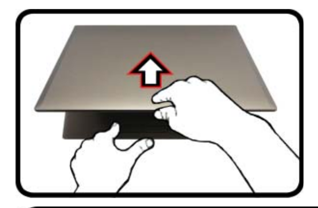
Related Documents

You may also need to consult the following manual for additional information:

User's Manual on CD/DVD
This describes the notebook PC's features and the procedures for operating the computer and its ROM-based setup program. It also describes the installation and operation of the utility programs provided with the notebook PC.

System Startup

1. Remove all packing materials.
2. Place the computer on a stable surface.
3. Insert the battery and make sure it is locked in position.
4. Securely attach any peripherals you want to use with the computer (e.g. keyboard and mouse) to their ports.
5. **When first setting up the computer use the following procedure** (as to safeguard the computer during shipping, the battery will be locked to not power the system until first connected to the AC/DC adapter and initially set up as below):
   - Attach the AC/DC adapter cord to the DC-In jack on the rear of the computer, then plug the AC power cord into an outlet, and connect the AC power cord to the AC/DC adapter. The battery will now be unlocked.
6. Use one hand to raise the lid/LCD to a comfortable viewing angle (do not exceed 130 degrees); use the other hand (as illustrated in Figure 1) to support the base of the computer (**Note: Never** lift the computer by the lid/LCD).
7. Press the power button to turn the computer "on".





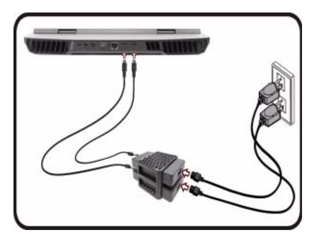


Figure 1
Opening the Lid/LCD/ Computer with AC/DC Adapter Plugged-In

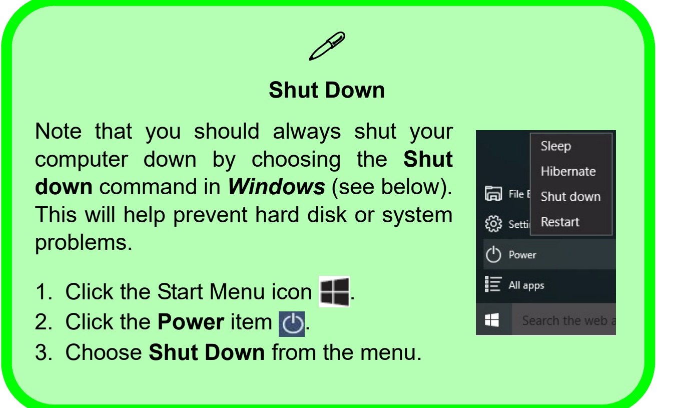
Powering the Computer On

After every disassembly, make sure that the bottom case's screws are all inserted and tightened before opening the Lid/LCD and turning the computer on.

Shut Down

Note that you should always shut your computer down by choosing the **Shut down** command in ***Windows*** (see below). This will help prevent hard disk or system problems.

1. Click the Start Menu icon .
2. Click the **Power** item .
3. Choose **Shut Down** from the menu.



Contents

Chapter 1: Introduction

Overview

This manual covers the information you need to service or upgrade the ***X170SM*** series notebook computer. Information about operating the computer (e.g. getting started, and the *Setup* utility) is in the *User's Manual*. Information about drivers (e.g. VGA & audio) is also found in the *User's Manual*. The manual is shipped with the computer.

Operating systems (e.g. *Windows 10,* etc.) have their own manuals as do application softwares (e.g. word processing and database programs). If you have questions about those programs, you should consult those manuals.

The ***X170SM*** series notebook is designed to be upgradeable. See ***Disassembly on page 2 - 1*** for a detailed description of the upgrade procedures for each specific component. Please take note of the warning and safety information indicated by the "🔔" symbol.

The balance of this chapter reviews the computer's technical specifications and features.

Specifications



Latest Specification Information

The specifications listed here are correct at the time of sending them to the press. Certain items (particularly processor types/speeds) may be changed, delayed or updated due to the manufacturer's release schedule. Check with your service center for more details.



CPU

The CPU is not a user serviceable part. Accessing the CPU in any way may violate your warranty.

Processor Options

i9-10900K (3.70GHz)
20MB Smart Cache, **14nm**, DDR4-2933MHz, TDP 125W
i9-10900 (2.80GHz)
20MB Smart Cache, **14nm**, DDR4-2933MHz, TDP 65W
i7-10700K (3.80GHz)
16MB Smart Cache, **14nm**, DDR4-2933MHz, TDP 125W
i7-10700 (2.90GHz)
16MB Smart Cache, **14nm**, DDR4-2933MHz, TDP 65W
i5-10600K (4.10GHz)
12MB Smart Cache, **14nm**, DDR4-2666MHz, TDP 125W
i5-10400 (2.90GHz)
12MB Smart Cache, **14nm**, DDR4-2666MHz, TDP 65W

Core Logic

Intel® Z490 Express Chipset

BIOS

128Mb SPI Flash ROM
INSYDE BIOS

Memory

Dual Channel DDR4
Four 260 Pin SO-DIMM Sockets

Supporting up to **3200MHz DDR4** Memory (The real memory operating frequency depends on the FSB of the processor.)

Memory Expandable from **16GB** (**minimum**) up to **128GB** (**maximum**)
Compatible with 8GB, 16GB or 32GB Modules
(*2 or 4 RAM Modules only*)

Storage

(**Factory Option**) **Four** M.2 2280 Solid State Drive (SSD)

Three M.2 2280 **SATA** SSDs supporting RAID level 0/1/5 and **one** M.2 2280 **PCIe Gen3 x4** SSD

Or

Three M.2 2280 **PCIe Gen3 x4** SSDs supporting RAID level 0/1/5 and **one** M.2 2280 **SATA** SSD

LCD Options

LCD, 17.3" (43.94cm), 16:9, UHD (3840x2160)/FHD (1920x1080)

Video Adapter

NVIDIA® GeForce RTX 2080 Super
8GB GDDR6 Video RAM on board
Microsoft DirectX® 12 Compatible
NVIDIA® GeForce RTX 2070 Super
8GB GDDR6 Video RAM on board
Microsoft DirectX® 12 Compatible
NVIDIA® GeForce RTX 2070
8GB GDDR6 Video RAM on board
Microsoft DirectX® 12 Compatible
NVIDIA® GeForce RTX 2060
6GB GDDR6 Video RAM on board
Microsoft DirectX® 12 Compatible

Security

Security (Kensington® Type) Lock Slot
BIOS Password
TPM 2.0
Fingerprint Sensor

Keyboard

Full Size **Full Color N-Key Rollover "Per Key"** LED Keyboard (with Numeric Keypad)

Pointing Device

Built-in Secure Pad (with Microsoft PTP Multi Gesture & Scrolling Functionality)

Audio

High Definition Audio Compliant Interface
S/PDIF Digital Output
Built-In Array Microphone
Two 3W Speakers
One 5W Subwoofer
Sound Blaster Atlas
Super X-Fi headphone holography

M.2 Slots

Slot 1 for **Combo WLAN and Bluetooth** Module
Slot 2 for **SATA** or **PCIe Gen3 x4 SSD**
Slot 3 for **SATA** or **PCIe Gen3 x4 SSD**
Slot 4 for **PCIe Gen3 x4 SSD**
Slot 5 for **SATA SSD**

Interface

One USB 3.2 Gen 2 Type-C Port*
**The maximum amount of current supplied by USB Type-C ports is 500mA (USB 2.0)/900mA (USB 3.2).*
One USB 3.2 Gen 2 Type-A Port
One USB 3.2 Gen 1 Type-A Port
One USB 2.0 Port
One Mini DisplayPort 1.4 (iGPU - integrated)
One Mini DisplayPort 1.4 (dGPU - discrete)
One HDMI-Out Port
One 2- In-1 Audio Jack (Microphone and S/PDIF Optical)
One 2- In-1 Audio Jack (Headphone and Microphone)
One RJ-45 LAN Jack
One DC-In Jack

Card Reader

Embedded Multi-In-1 Push-Push Card Reader
MMC (MultiMedia Card)/RS MMC
SD (Secure Digital)/Mini SD/SDHC/ SDXC (up to UHS-III)

Communication

1.0M HD PC Camera Module
Built-In Killer 10/100/1000/2500Mb Base-TX Ethernet LAN

WLAN/ Bluetooth M.2 Modules:

(**Factory Option**) Intel® Dual Band Wi-Fi 6 AX200 Wireless LAN (**802.11ax**) + Bluetooth PCIe

(**Factory Option**) Intel® Dual Band Wi-Fi 6 AX201 Wireless LAN (**802.11ax**) + Bluetooth CNVi

(**Factory Option**) Killer™ Dual Band Wi-Fi 6 AX1650i Wireless LAN (**802.11ax**) + Bluetooth CNVi

(**Factory Option**) Killer™ Dual Band Wi-Fi 6 AX1650x Wireless LAN (**802.11ax**) + Bluetooth PCIe

Environmental Spec

Temperature
Operating: 5°C - 35°C
Non-Operating: -20°C - 60°C
Relative Humidity
Operating: 20% - 80%
Non-Operating: 10% - 90%

Power

Removable 8 Cell Smart Lithium-Ion Battery Pack, 97WH

Dual Full Range AC/DC Adapters

Full Range AC/DC Adapter
AC Input: 100 - 240V, 50 - 60Hz
DC Output: 20V, 14A x 2 (**280W**)

Dimensions & Weight

399mm (w) * 319mm (d) * 43.5mm (h)
4.5kg (Barebone with 97WH Battery)

External Locator - Top View with LCD Panel Open

Figure 1
Top View

1. PC Camera
2. *Camera LED
   **When the camera is in use, the LED will be illuminated.*
3. Built-In Array Microphone
4. LCD
5. Power Button
6. Keyboard
7. Touchpad & Buttons
8. Fingerprint Sensor



External Locator - Front & Right Side Views

FRONT VIEW



Figure 2
Front View

1. LED Indicators
2. Speakers

RIGHT SIDE VIEW



Figure 3
Right Side View

1. USB 3.2 Gen 2x2 Type-C Port
2. DisplayPort 1.4 over USB 3.2 Gen 2 Type-C Port
3. Powered USB 3.2 Gen 2 Type-A Port
4. Vent
5. Security Lock Slot

External Locator - Left Side & Rear View

Figure 4
Left Side View

1. Vent
2. Multi-in-1 Card Reader
3. USB 3.2 Gen 2 Type-A Ports
4. 2- In-1 Audio Jack (Microphone and S/PDIF Optical)
5. 2- In-1 Audio Jack (Headphone and Microphone)

LEFT SIDE VIEW



Figure 5
Rear View

1. Vent
2. Thunderbolt 3 Port
3. Mini DisplayPorts 1.4
4. HDMI-Out Port
5. RJ-45 LAN Jack
6. DC-In Jacks
7. Light Bar

REAR VIEW



External Locator - Bottom View

Figure 6
Bottom View

1. Battery
2. Vent
3. Subwoofer
4. Speakers



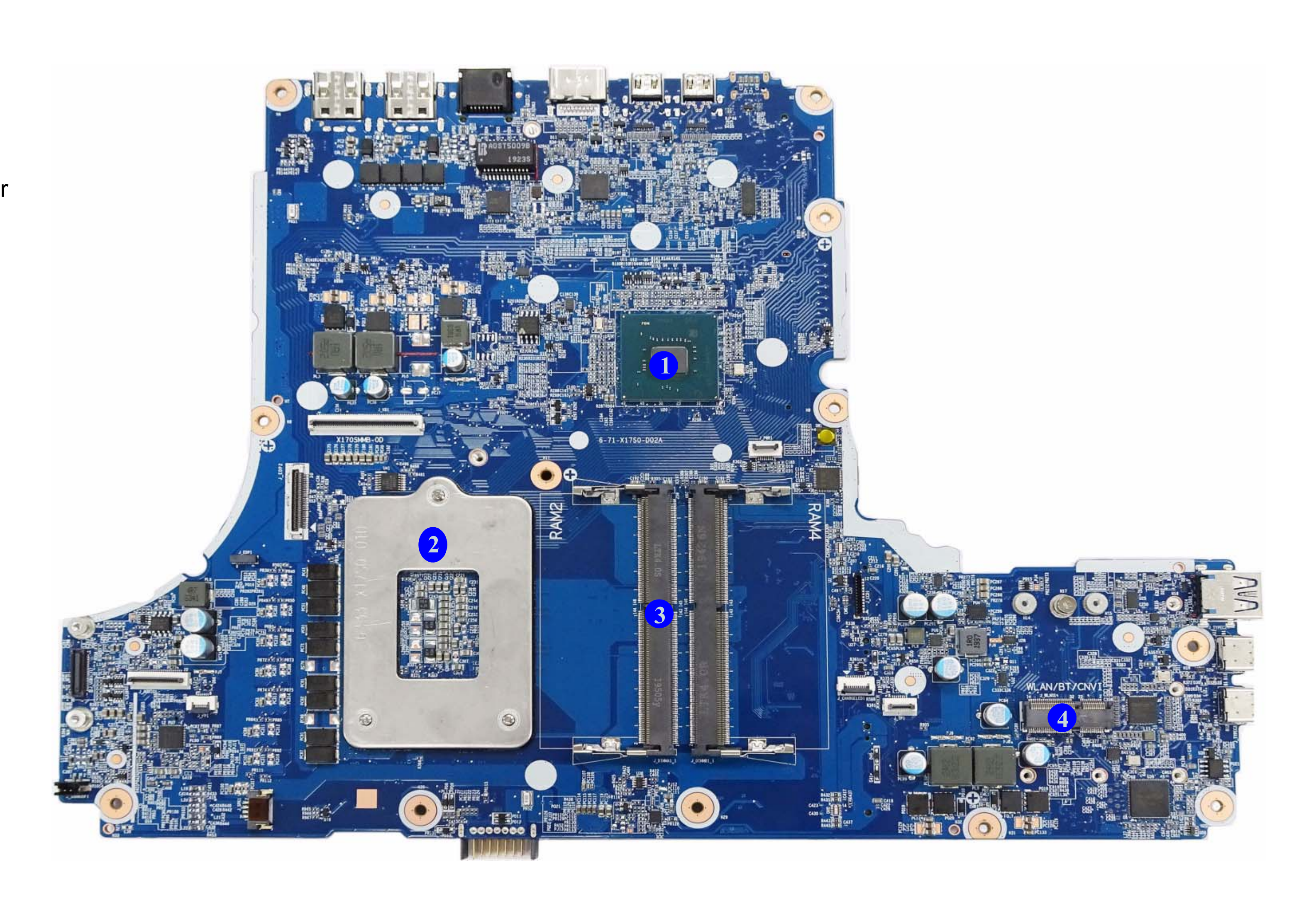
Overheating

To prevent your computer from overheating, make sure nothing blocks any vent while the computer is in use.

Mainboard Overview - Top (Key Parts)

Figure 7
Mainboard Top Key Parts

1. PCH
2. CPU
3. Memory Slots DDR4 SO-DIMM
4. M.2 Card Connector (WLAN Module)



Mainboard Overview - Bottom (Key Parts)

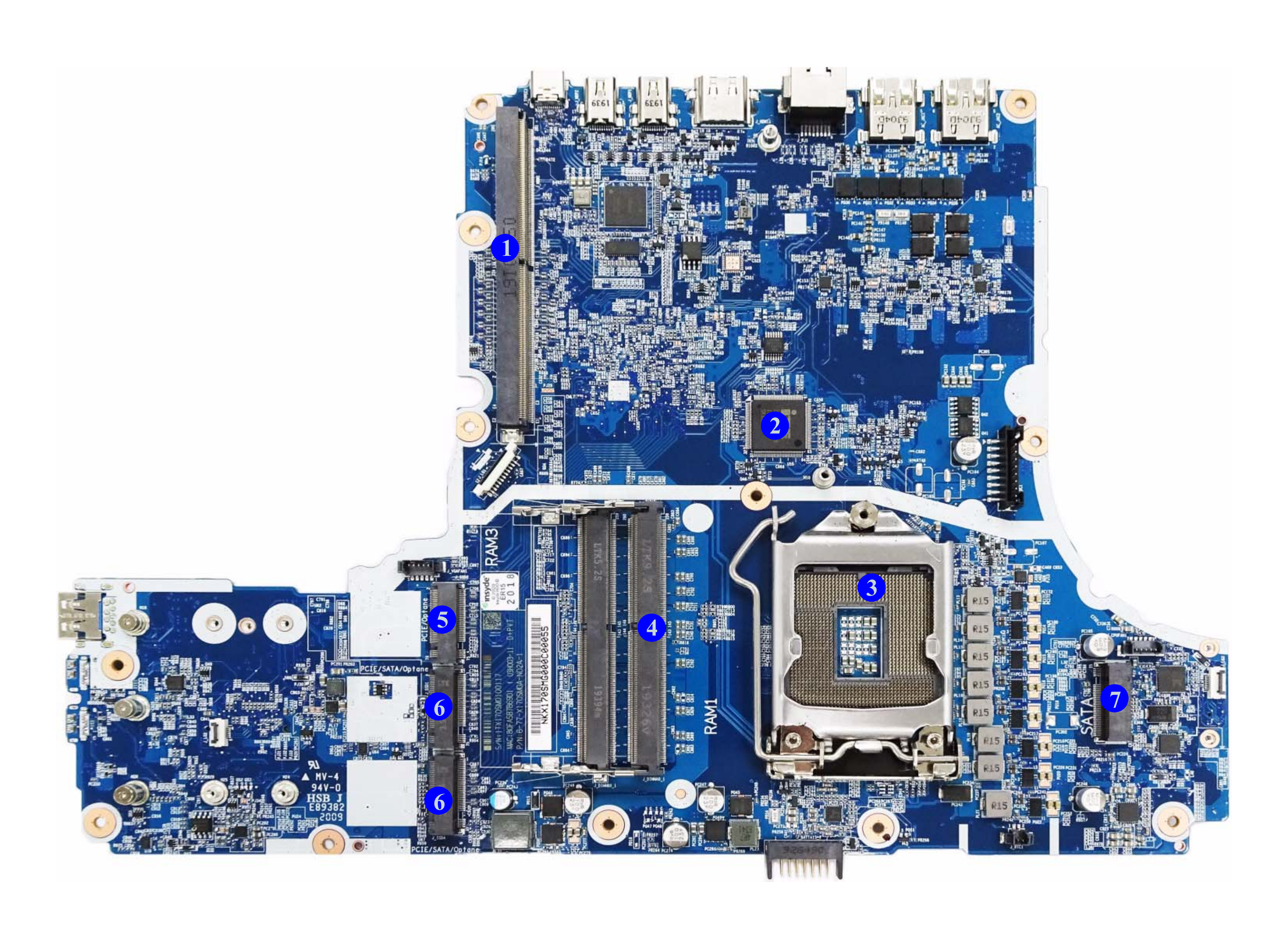


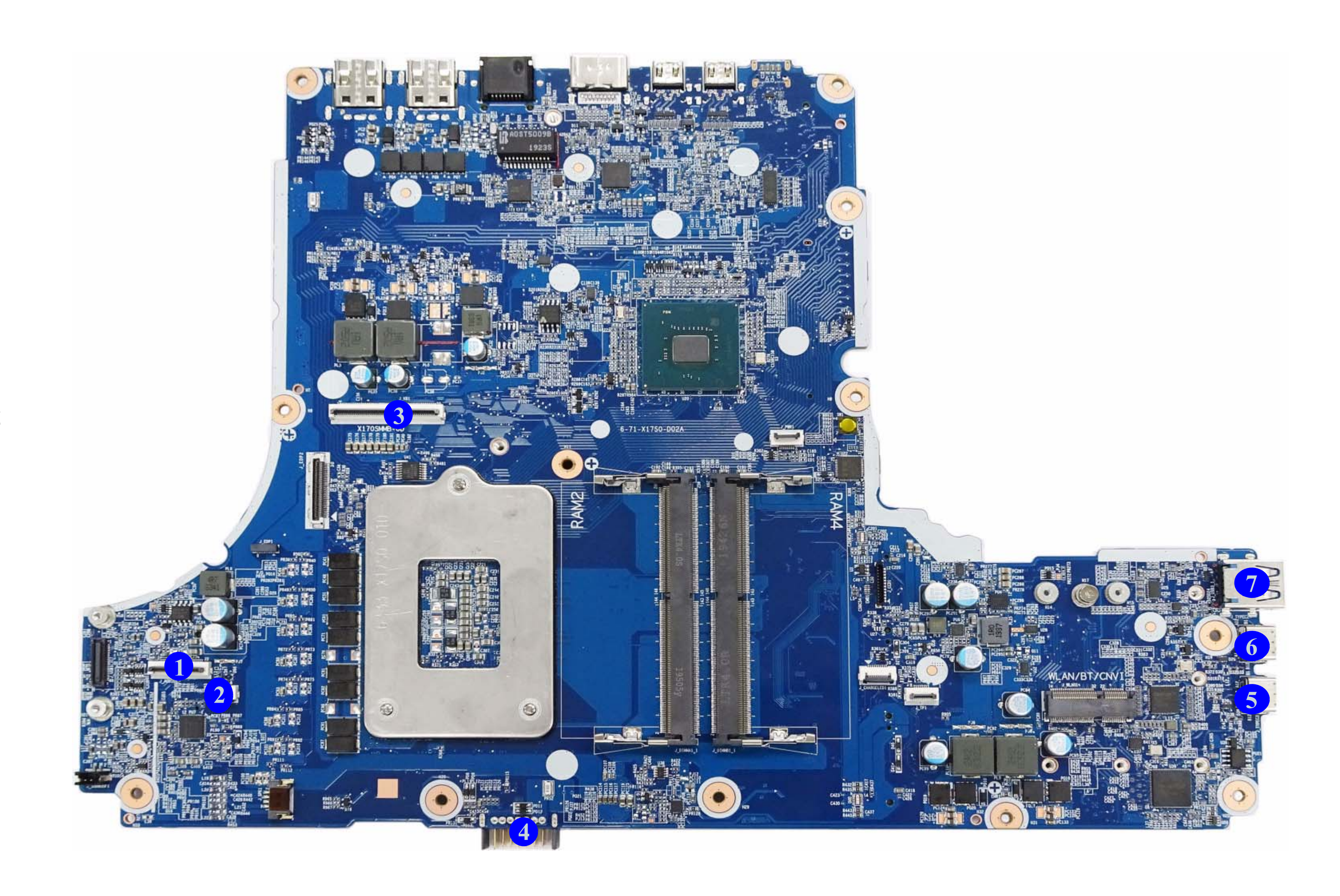
Figure 8
Mainboard Bottom Key Parts

1. Graphic Card Connector
2. KBC-ITE IT5570
3. CPU Socket (no CPU installed)
4. Memory Slots DDR4 SO-DIMM
5. M.2-Card Connector (PCIE SSD)
6. M.2 Card Connector (SATA/ PCIE SSD)
7. M.2-Card Connector (SATA SSD)

Mainboard Overview - Top (Connectors)

Figure 9
Mainboard Top Connectors

1. Audio Connector
2. FP Connector
3. Keyboard Cable Connector
4. Battery Connector
5. USB 3.2 Gen 2x2 Type-C Port
6. DisplayPort 1.4 over USB 3.2 Gen 2 Type-C Port
7. Powered USB 3.2 Gen 2 Type-A Port



Mainboard Overview - Bottom (Connectors)

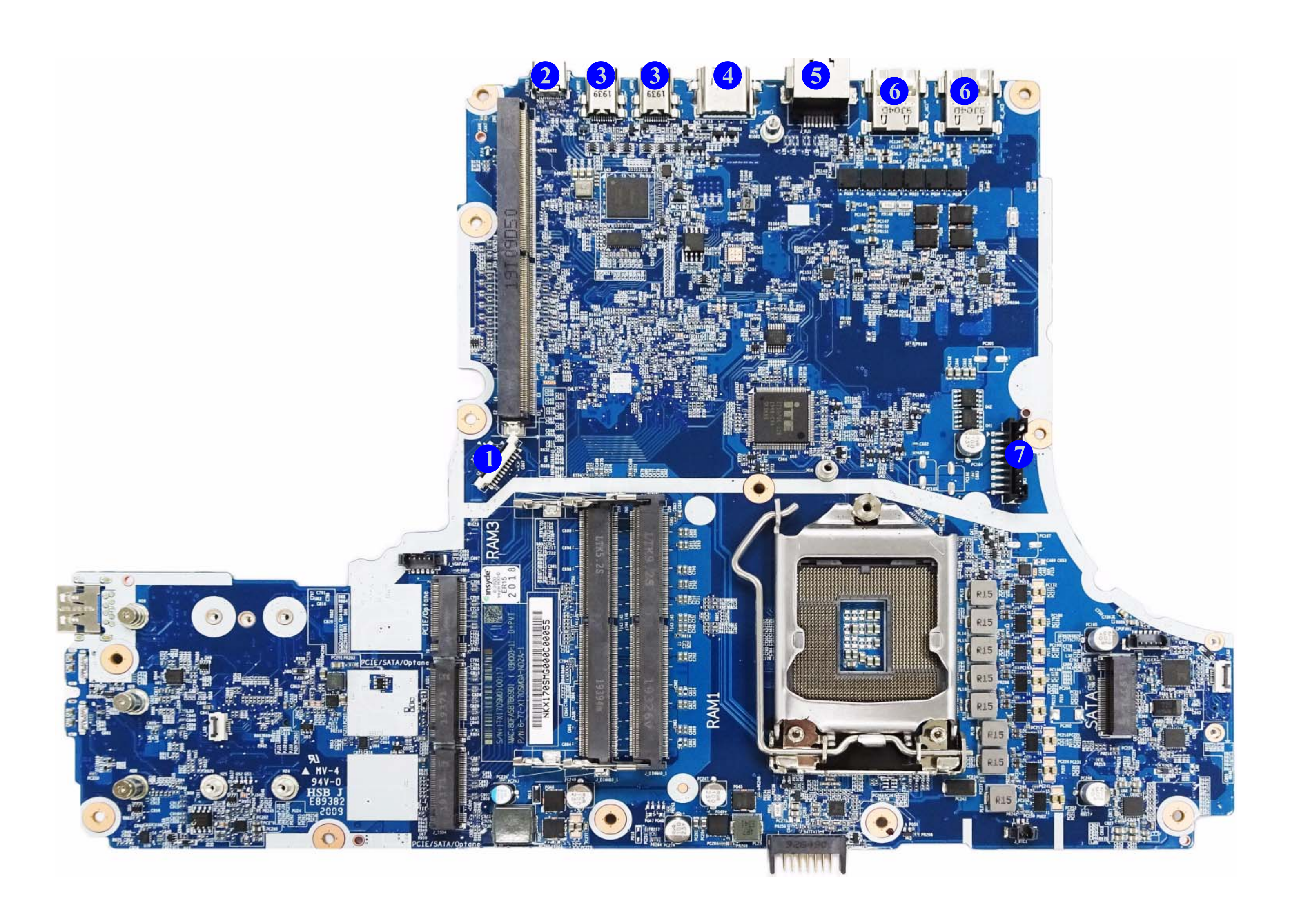


Figure 10
Mainboard Bottom Connectors

1. Light Guide Connector
2. Thunderbolt 3 Port
3. Mini DisplayPort 1.4
4. HDMI-Out Port
5. RJ-45 LAN Jack
6. DC-In Jacks
7. GPU Power Connector

Chapter 2: Disassembly

Overview

This chapter provides step-by-step instructions for disassembling the ***X170SM*** series notebook's parts and subsystems. When it comes to reassembly, reverse the procedures (unless otherwise indicated).

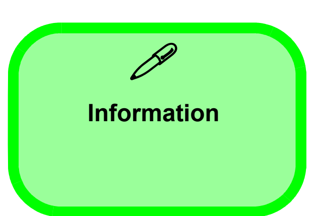
We suggest you completely review any procedure before you take the computer apart.

Procedures such as upgrading/replacing the RAM, optical device and hard disk are included in the User's Manual but are repeated here for your convenience.

To make the disassembly process easier each section may have a box in the page margin. Information contained under the figure # will give a synopsis of the sequence of procedures involved in the disassembly procedure. A box with a lists the relevant parts you will have after the disassembly process is complete. **Note**: The parts listed will be for the disassembly procedure listed ONLY, and not any previous disassembly step(s) required. Refer to the part list for the previous disassembly procedure. The amount of screws you should be left with will be listed here also.

A box with a will also provide any possible helpful information. A box with a contains warnings.

An example of these types of boxes are shown in the sidebar.



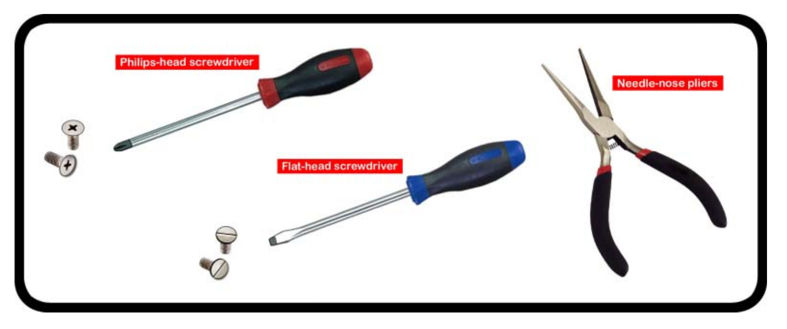


NOTE: All disassembly procedures assume that the system is turned **OFF**, and disconnected from any power supply (the battery is removed too).

Maintenance Tools

The following tools are recommended when working on the notebook PC:

- M3 Philips-head screwdriver
- M2.5 Philips-head screwdriver (magnetized)
- M2 Philips-head screwdriver
- Small flat-head screwdriver
- Pair of needle-nose pliers
- Anti-static wrist-strap





Connections

Connections within the computer are one of four types:



Locking collar sockets for ribbon connectors	To release these connectors, use a small flat-head screwdriver to gently pry the locking collar away from its base. When replacing the connection, make sure the connector is oriented in the same way. The pin1 side is usually not indicated.
Pressure sockets for multi-wire connectors	To release this connector type, grasp it at its head and gently rock it from side to side as you pull it out. Do not pull on the wires themselves. When replacing the connection, do not try to force it. The socket only fits one way.
Pressure sockets for ribbon connectors	To release these connectors, use a small pair of needle-nose pliers to gently lift the connector away from its socket. When replacing the connection, make sure the connector is oriented in the same way. The pin1 side is usually not indicated.
Board-to-board or multi-pin sockets	To separate the boards, gently rock them from side to side as you pull them apart. If the connection is very tight, use a small flat-head screwdriver - use just enough force to start.

Maintenance Precautions

The following precautions are a reminder. To avoid personal injury or damage to the computer while performing a removal and/or replacement job, take the following precautions:

1. **Don't drop it**. Perform your repairs and/or upgrades on a stable surface. If the computer falls, the case and other components could be damaged.
2. **Don't overheat it**. Note the proximity of any heating elements. Keep the computer out of direct sunlight.
3. **Avoid interference**. Note the proximity of any high capacity transformers, electric motors, and other strong magnetic fields. These can hinder proper performance and damage components and/or data. You should also monitor the position of magnetized tools (i.e. screwdrivers).
4. **Keep it dry**. This is an electrical appliance. If water or any other liquid gets into it, the computer could be badly damaged.
5. **Be careful with power**. Avoid accidental shocks, discharges or explosions.
   •Before removing or servicing any part from the computer, turn the computer off and detach any power supplies.
   •When you want to unplug the power cord or any cable/wire, be sure to disconnect it by the plug head. Do not pull on the wire.
6. **Peripherals** – Turn off and detach any peripherals.
7. **Beware of static discharge**. ICs, such as the CPU and main support chips, are vulnerable to static electricity. Before handling any part in the computer, discharge any static electricity inside the computer. When handling a printed circuit board, do not use gloves or other materials which allow static electricity buildup. We suggest that you use an anti-static wrist strap instead.
8. **Beware of corrosion**. As you perform your job, avoid touching any connector leads. Even the cleanest hands produce oils which can attract corrosive elements.
9. **Keep your work environment clean**. Tobacco smoke, dust or other air-born particulate matter is often attracted to charged surfaces, reducing performance.
10. **Keep track of the components**. When removing or replacing any part, be careful not to leave small parts, such as screws, loose inside the computer.



Power Safety Warning

Before you undertake any upgrade procedures, make sure that you have turned off the power, and disconnected all peripherals and cables (including telephone lines and power cord). It is advisable to also remove your battery in order to prevent accidentally turning the machine on.

Cleaning

Do not apply cleaner directly to the computer, use a soft clean cloth.
Do not use volatile (petroleum distillates) or abrasive cleaners on any part of the computer.
(For Computer Models Supplied with Light Blue Cleaning Cloth) Some computer models in this series come supplied with a light blue cleaning cloth. To clean the computer case with this cloth follow the instructions below.

- Power off the computer and peripherals.
- Disconnect the AC/DC adapter from the computer.
- Use a little water to dampen the cloth slightly.
- Clean the computer case with the cloth.
- Dry the computer with a dry cloth, or allow it time to dry before turning on.
- Reconnect the AC/DC adapter and turn the computer on.

Disassembly Steps

The following table lists the disassembly steps, and on which page to find the related information. **PLEASE PERFORM THE DISASSEMBLY STEPS IN THE ORDER INDICATED.**

To remove the Battery:

1. Remove the battery *page 2 - 5*

To remove and install the Processor:

1. Remove the battery *page 2 - 5*
2. Remove the processor *page 2 - 6*
3. Install the processor *page 2 - 9*

To remove and install the Video Card:

1. Remove the battery *page 2 - 5*
2. Remove the video card *page 2 - 10*
3. Install the video card *page 2 - 11*

To remove the Keyboard:

1. Remove the battery *page 2 - 5*
2. Remove the keyboard *page 2 - 12*

To remove the System Memory:

1. Remove the battery *page 2 - 5*
2. Remove the system memory *page 2 - 13*

To remove the M.2 SSD:

1. Remove the battery *page 2 - 5*
2. Remove the SSD *page 2 - 15*

To remove the Wireless LAN Module:

1. Remove the battery *page 2 - 5*
2. Remove the WLAN *page 2 - 18*

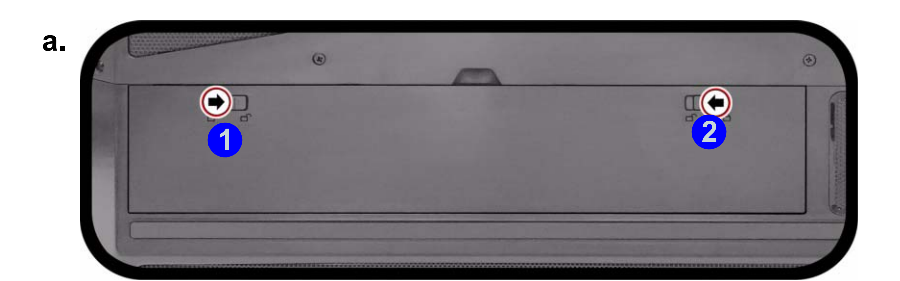
To remove the CCD Module:

1. Remove the battery *page 2 - 5*
2. Remove the CCD module *page 2 - 20*

Removing the Battery

1. Turn the computer **off**, and turn it over.
2. Slide the latch 1 in the direction of the arrow (***Figure 1a***).
3. Slide the latch 2 in the direction of the arrow.
4. While holding the latch 2, lift the battery 3 (***Figure 1b***) out of the compartment 4 (***Figure 1c***).

a.



b.



c.

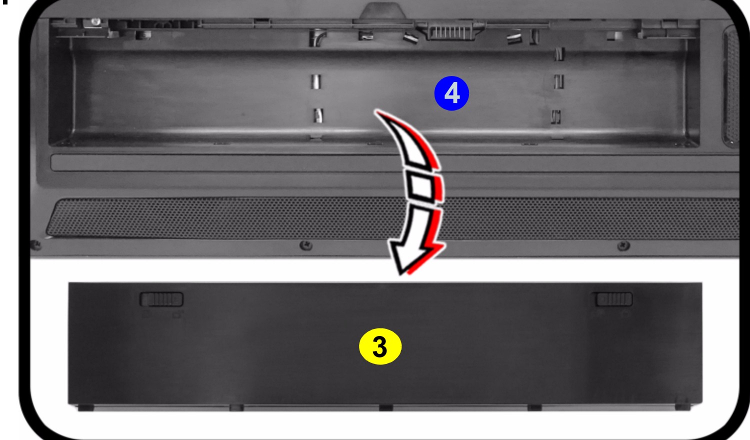
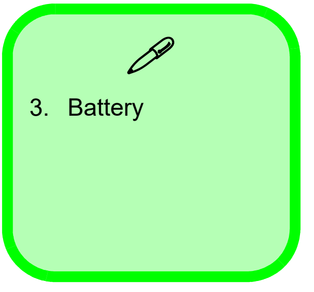


Figure 1
Battery Removal

a. Slide the latch 1 in the direction of the arrow. and slide the latch 2 in the direction of the arrow.
b. Lift the battery.
c. Remove the battery.



3. Battery

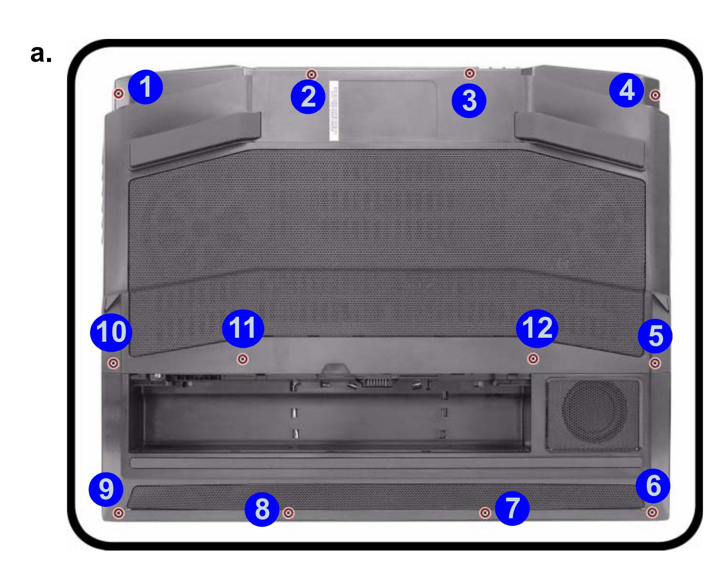
Figure 2
Processor Removal

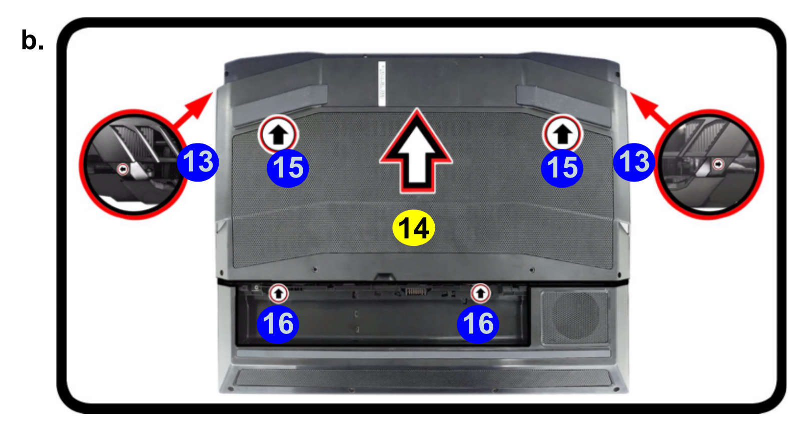
a. Remove the screws.
b. Slide the bottom cover out.
c. Remove the bottom cover.

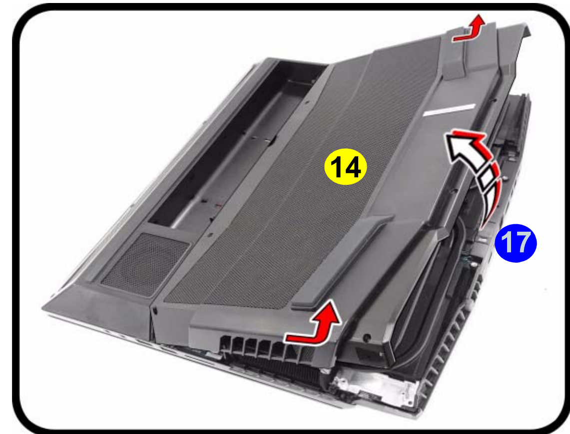
Removing and Installing the Processor

Processor Removal Procedure

1. Turn **off** the computer, remove the battery (***page 2 - 5***) and bottom cover (***page 2 - 6***).
2. Remove screws 1 - 12 (***Figure 2a***).
3. Make sure that the structure at both ends 13 of the bottom cover are in position. Slide the bottom cover 14 out in the direction of the arrow by pressing at point 15 - 16 until its released (***Figure 2b***).
4. Carefully lift the bottom cover 14 up in the direction of the arrow 17 as shown (***Figure 2c***).

a.


b.


c.




14. Bottom Cover

- 12 Screws

5. Remove the bottom cover 14 and screws 18 - 20 (*Figure 3d*).
6. Remove the adhesive tape 21 and carefully disconnect the light bar cable from the locking collar socket 22. Remove the light bar 23 (*Figure 3e*).
7. Disconnect the cable 24 - 25, remove the tape 26 and screws 1 - 7 in the order indicated on the label (i.e screw 7 first through to screw 1 last) and screws 27 - 34 from the CPU fan & heat sink unit 35 (*Figure 3f*).
8. Carefully (it may be hot) remove the heat sink unit 35 as shown (*Figure 2hf*).

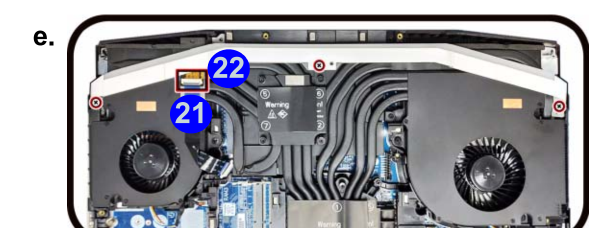
Figure 3
Processor Removal (cont'd)

d. Remove the SD cover and screws.
e. Remove the adhesive tape and disconnect the light bar cable. Remove the light bar.
f. Disconnect the fan cable and remove the tape and screws as directed.
g. Carefully remove the heat sink unit.

d.

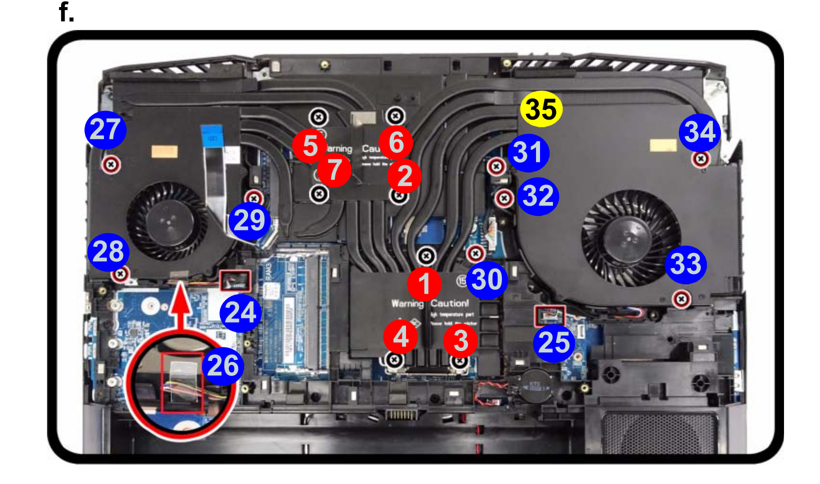


e.





f.



g.





23. Light Bar
35. Heat Sink Unit

- 15 Screws

Figure 4
Processor Removal (cont'd)

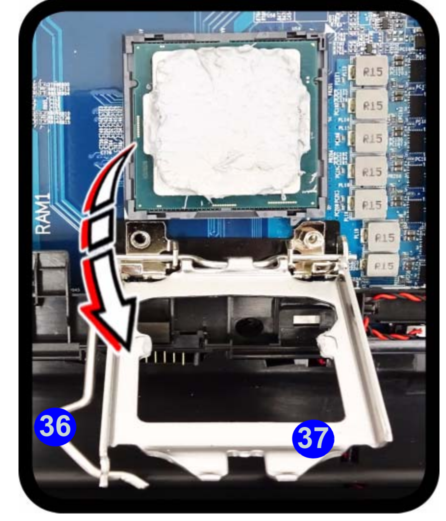
h. Move the latch and bracket fully in the direction indicated to unlock the CPU.
i. Lift the CPU out of the socket.

9. Press down and hold the latch 36 (with the latch held down you will be able to release it).
10. Move the latch 36 and bracket 37 fully in the direction indicated to unlock the CPU(***Figure 4h***).
11. Carefully (it may be hot) lift the CPU  A up out of the socket (***Figure 4i***).
12. See ***page 2 - 9*** for information on inserting a new CPU.
13. When re-inserting the CPU, pay careful attention to the pin alignment, it will fit only one way (DO NOT FORCE IT!).

h.



Unlock



i.

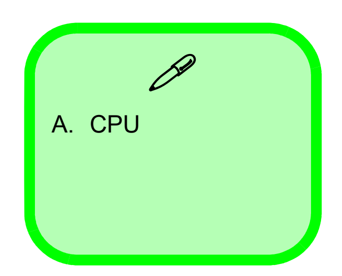






Caution

The heat sink, and CPU area in general, contains parts which are subject to high temperatures. Allow the area time to cool before removing these parts.



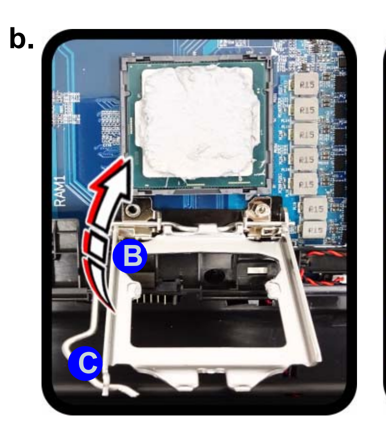
A. CPU

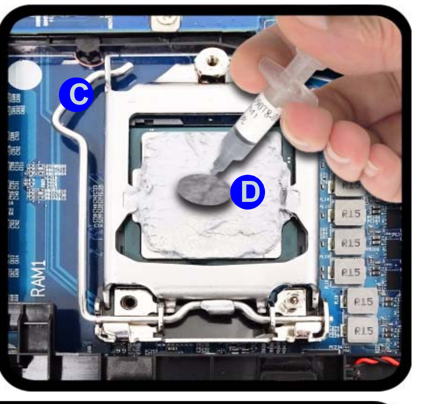
2.Disassembly

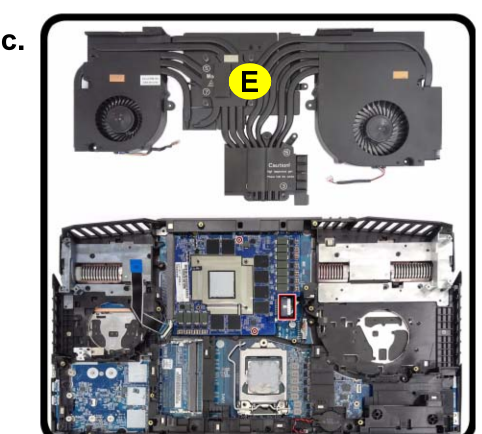
Processor Installation Procedure

1. Insert the CPU A; pay careful attention to the pin alignment (*Figure 5a*), it will fit only one way (DO NOT FORCE IT!).
2. Move the bracket B and latch C fully in the direction indicated to lock the CPU.
3. Apply the thermal grease D to the top of the CPU as shown (*Figure 5b*).
4. Insert the heat sink E as indicated in *Figure 5c*.
5. Tighten the CPU heat sink screws in the order 1 - 7 (the order as indicated on the label), 8 - 15 (*Figure 5d*). Note that the screw lock torque value is 1.7KG when tightening screws using electric screwdriver.
6. Connect the CPU fan cable G - H, then replace the tape I. Replace the bottom cover by carefully inserting the tab in place (make sure to align the tabs at both sides - see point 13 on *page 2 - 6*) and then tighten the screws.

a.


b.




c.


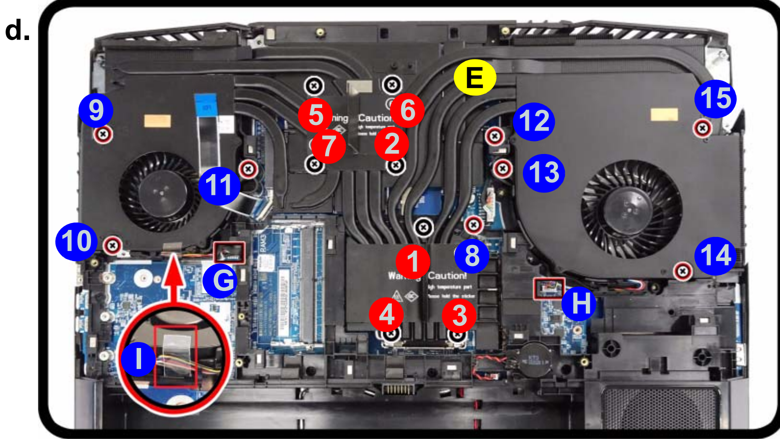
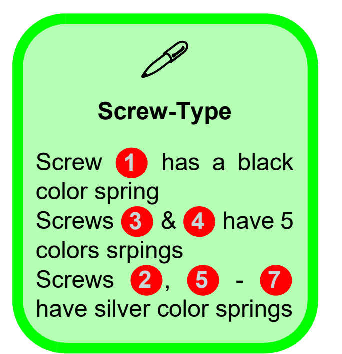
d.


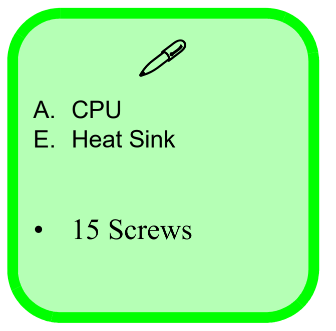
Figure 5
Processor Installation

a. Insert the CPU.
b. Move the latch and bracket fully in the direction indicated to lock the CPU. Apply thermal grease.
c. Insert the heatsink.
d. Tighten the screws.



Screw-Type

Screw 1 has a black color spring
Screws 3 & 4 have 5 colors srpings
Screws 2, 5 - 7 have silver color springs



A. CPU
E. Heat Sink

- 15 Screws

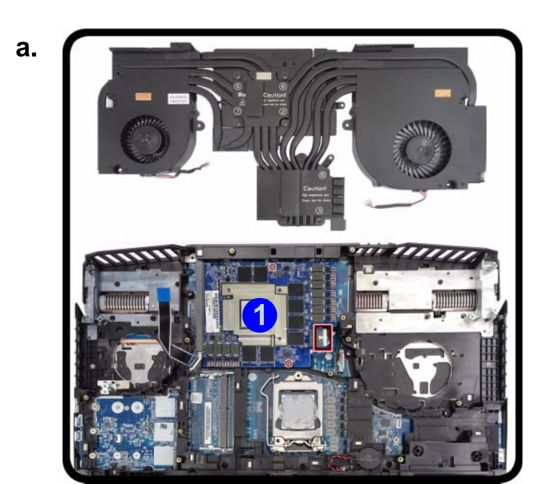
Removing and Installing the Video Card

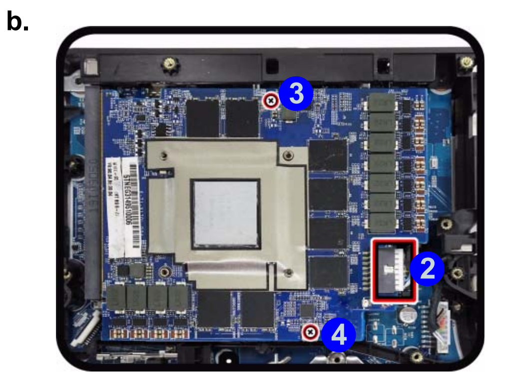
Video Card Removal Procedure

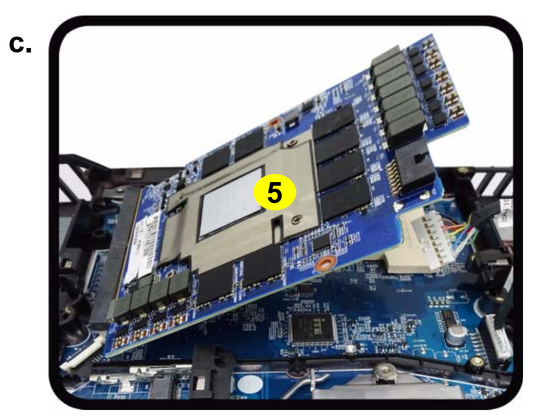
1. Turn **off** the computer, remove the battery (***page 2 - 5***), bottom cover (***page 2 - 6***), and heatsink (***page 2 - 7***).
2. The video card will be visible at point **1** on the mainboard (***Figure 6a***).
3. Disconnect cable **2** and remove screws **3** & **4** from the video card (***Figure 6b***).
4. The video card **5** will pop up (***Figure 6c***).
5. Remove the video card **5** (***Figure 6d***).

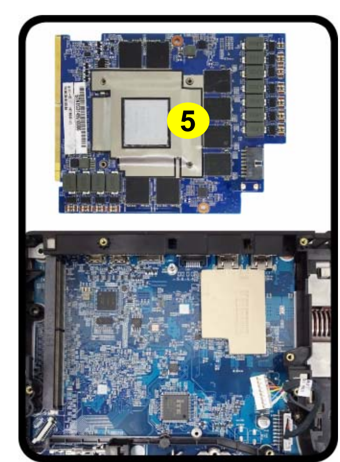
Figure 6
Video Card Removal Procedure

a. The video card will be visible at point **1** on the mainboard.
b. Disconnect the cable and remove the screws.
c. The video card will pop up.
d. Remove the video card.

a.


b.


c.


d.


Caution

The heat sink, and video card area in general, contains parts which are subject to high temperatures. Allow the area time to cool before removing these parts.



5. Video Card

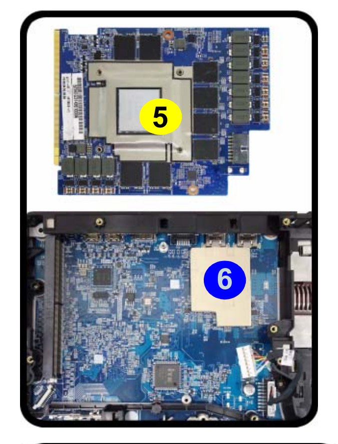
• 2 Screws

2.Disassembly

Video Card Installation Procedure

1. Make sure that the thermal pad 6 is in placed as shown (*Figure 7e*).
2. Prepare to fit the video card 5 into the slot by holding it at about a 30° angle (*Figure 7f*).
3. The card needs to be fully into the slot, and the video card and socket have a guide-key and pin which align to allow the card to fit securely (*Figure 7g*).
4. Fit the connectors firmly into the socket, straight and evenly.

e.

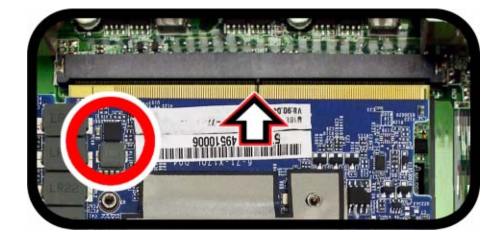


f.

g.







h.



Figure 7
Installing a New Video Card

e. Place the thermal pad.
f. Insert the video card at a 30 degree angle.
g. Fit the connectors straight and even, and secure the card with the screws.
h. Apply thermal grease.



Caution

The heat sink, and video card area in general, contains parts which are subject to high temperatures. Allow the area time to cool before removing these parts.

5. DO NOT attempt to push one end of the card in ahead of the other.
6. The card's pin alignment will allow it to only fit one way. **Make sure the module is seated as far into the socket as it will go**. DO NOT FORCE the card; it should fit without much pressure.
7. Connect the cable 7 and secure the card with screws 8 & 9 (*Figure 6 on page 2 - 10*).
8. Apply the whole tube of thermal grease 10 to the center of the main VGA chip as shown (*Figure 7h*).
9. Place the heat sink back on the card, and secure the screws in the order indicated in *Figure 3 on page 2 - 7*.
10. Reinsert the component bay cover, and secure with the screws as indicated in *Figure 5 on page 2 - 9*.



5. Video Card

- 2 Screws

Figure 8
Keyboard Removal

a. Remove the screws and press at point 3 to un-snap keyboard from the bottom of the computer .
b. Lift the keyboard up and disconnect the keyboard ribbon cable from the locking collar socket.
c. Remove the keyboard.

Re-inserting the Key-board

When re-inserting the keyboard firstly, align the keyboard tabs at the bottom of the keyboard with the slots in the case.



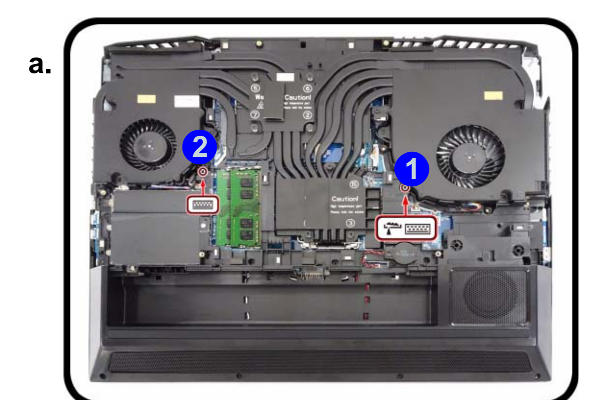
4. Eject Stick
6. Keyboard

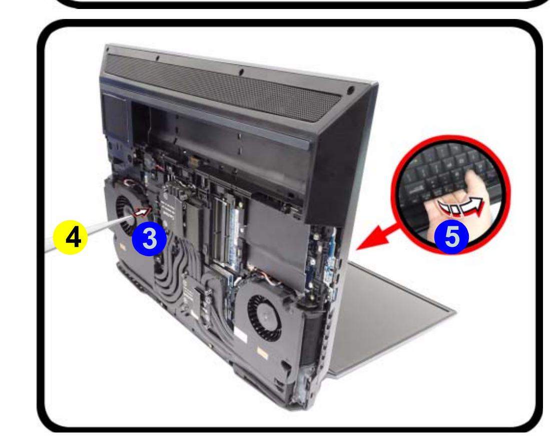
- 2 Screws

Removing the Keyboard

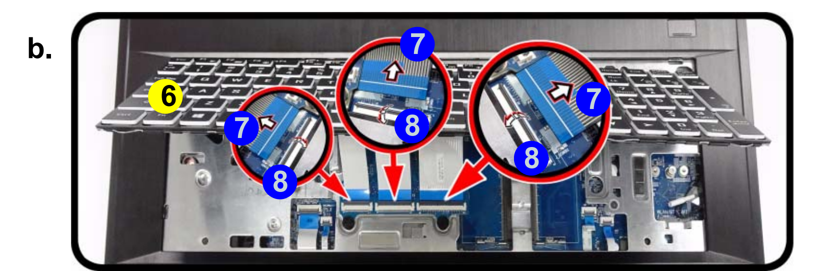
1. Turn **off** the computer, turn it over, remove the battery (*page 2 - 5*) and bottom cover (*page 2 - 6*).
2. Remove screws 1 - 2 from the bottom of the computer
3. Open it up with the LCD on a flat surface before pressing at point 3 to release the keyboard module (use the special eject stick 4 to do this) while releasing the keyboard in the direction of the arrow 5 as shown (*Figure 8a*)
4. Carefully loosen the three side locks and then slide to lift the keyboard 6 up, being careful not to bend the keyboard ribbon cable 7. Disconnect the keyboard ribbon cable 7 from the locking collar socket by using a flat-head screwdriver to pry the locking collar pins 8 (*Figure 8b*).
5. Carefully lift the keyboard 6 off the computer (*Figure 8c*).

a.





b.



c.



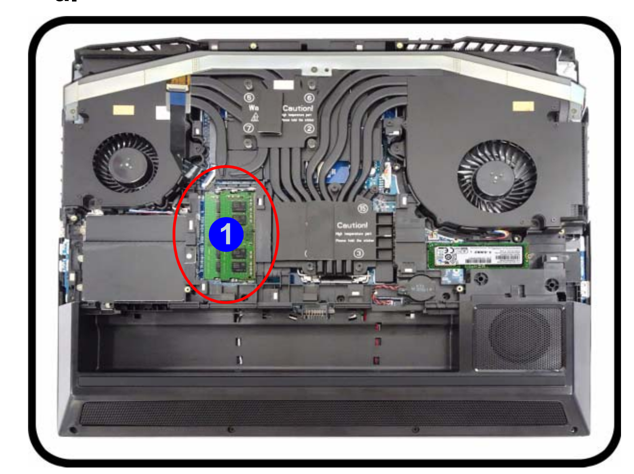
Removing the System Memory (RAM)

The computer has four memory sockets for 260 pin Small Outline Dual In-line Memory Modules (SO-DIMM) supporting DDR4 3200 MHz. The main memory can be expanded up to 64GB. The total memory size is automatically detected by the POST routine once you turn on your computer. *You must first install modules in slots 1 & 3 on the mainboard bottom area, before installing modules in slots 2 & 4 underneath the keyboard.*

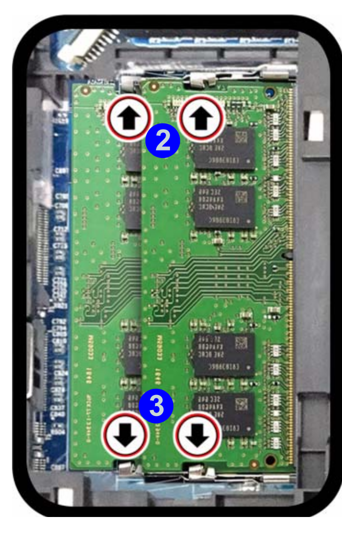
Memory 1 & 3 Upgrade Process

1. Turn **off** the computer, turn it over, remove the battery (***page 2 - 5***) and bottom cover (***page 2 - 6***).
2. The RAM-1 & 3 modules will be visible at point 1 on the mainboard (***Figure 9a***).
3. Gently pull the two release latches (2 & 3) on the sides of the memory socket in the direction indicated by the arrows (***Figure 9b***). The RAM module 4 will pop-up (***Figure 9c***), and you can then remove it.
4. Pull the latches to release the second module if necessary.
5. Insert a new module holding it at about a 30° angle and fit the connectors firmly into the memory slot.
6. The module will only fit one way as defined by its pin alignment. Make sure the module is seated as far into the slot as it will go. DO NOT FORCE IT; it should fit without much pressure.
7. Press the module in and down towards the mainboard until the slot levers click into place to secure the module.
8. Replace the bottom cover and the screws (see ***page 2 - 6***).
9. Restart the computer to allow the BIOS to register the new memory configuration as it starts up.

a.



b.



c.

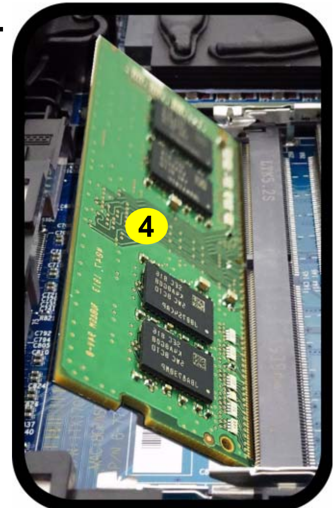


Figure 9
RAM-1 & 3 Module Removal

a. The RAM modules will be visible at point 1 on the mainboard.
b. Pull the release latches.
c. Remove the module.

Contact Warning

Be careful not to touch the metal pins on the module's connecting edge. Even the cleanest hands have oils which can attract particles, and degrade the module's performance.



4. RAM Modules

Figure 10
RAM-2 & 4 Module Removal

a. The RAM modules will be visible at point 1 on the mainboard.
b. Remove the keyboard connector board.
c. Pull the release latches.
d. Remove the module.

Memory 2 & 4 Upgrade Process

1. Turn **off** the computer, turn it over, remove the battery (***page 2 - 5***) and keyboard (***page 2 - 12***).
2. The RAM-2 & 4 modules will be visible at point 1 on the mainboard (***Figure 9a***).
3. Remove screws 2 - 3 and remove the keyboard connector board 4 as shown (***Figure 9b***).
4. Gently pull the two release latches (5 & 6) on the sides of the memory socket in the direction indicated by the arrows (***Figure 9c***). The RAM module 7 will pop-up (***Figure 9d***), and you can then remove it.
5. Pull the latches to release the second module if necessary.
6. Insert a new module holding it at about a 30° angle and fit the connectors firmly into the memory slot.
7. The module will only fit one way as defined by its pin alignment. Make sure the module is seated as far into the slot as it will go. DO NOT FORCE IT; it should fit without much pressure.
8. Press the module in and down towards the mainboard until the slot levers click into place to secure the module.
9. Replace the keyboard connector board, screws and keyboard (see ***page 2 - 6***).
10. Restart the computer to allow the BIOS to register the new memory configuration as it starts up.

Contact Warning

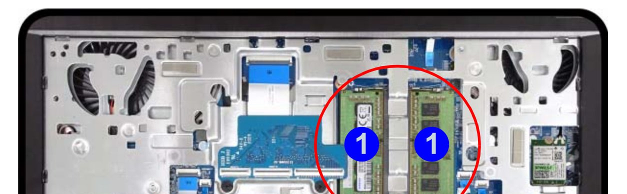
Be careful not to touch the metal pins on the module's connecting edge. Even the cleanest hands have oils which can attract particles, and degrade the module's performance.

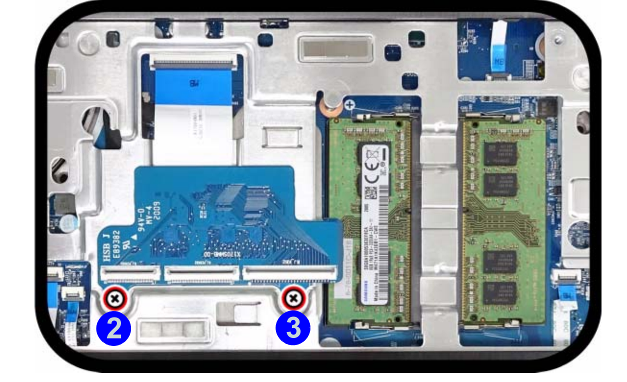


4. Keyboard Connector Board
7. RAM Modules

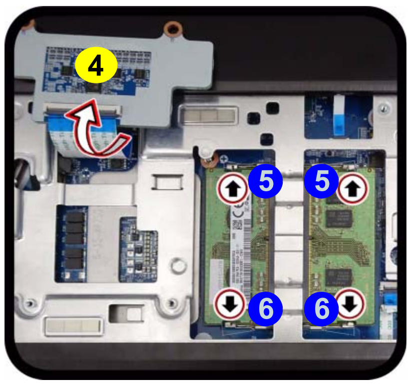
- 2 Screws

a.

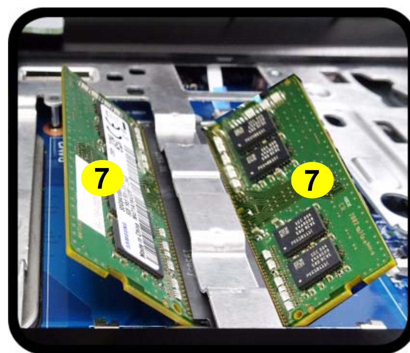




b.



c.



Removing and Installing the M.2 SSD Module

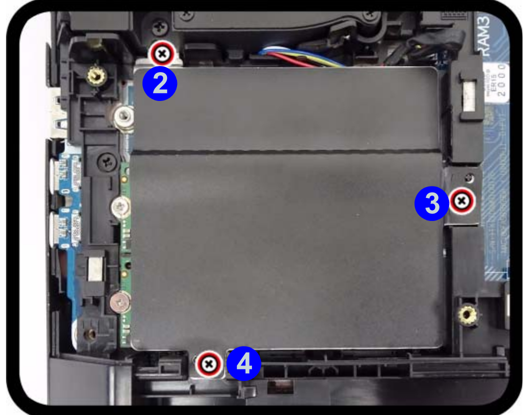
M.2 SSD-1, 2 & 3 Module Removal Procedure

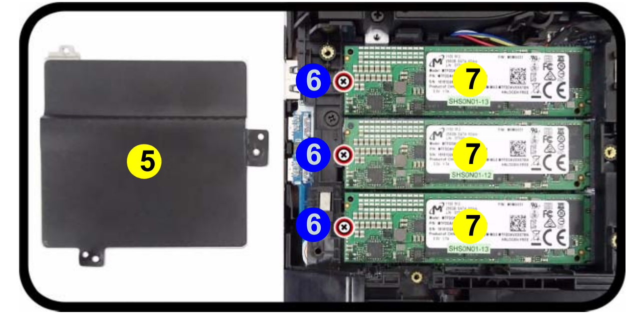
1. Turn **off** the computer, turn it over, remove the battery (***page 2 - 5***) and bottom cover (***page 2 - 6***).
2. The M.2 SSD module will be visible at point 1 on the mainboard (***Figure 11a***).
3. Remove screw 2 - 4 to release the bracket cover 5 (***Figure 11b***).
4. Remove the screws 6 (***Figure 11c***).
5. The M.2 SSD module 7 (***Figure 11d***) will pop-up.

Figure 11
M.2 SSD-1, 2 & 3 Module Removal

a. Locate the M.2 SSD.
b. Remove screws to release the bracket cover.
c. Remove the screw.
d. The M.2 SSD module will pop up.

a.


b.


c.


PCIE SSD

PCIE/SATA SSD

PCIE/SATA SSD

d.


5.Bracket Cover
7.M2 SSD Module

- 1 Screw

6. Remove the M.2 SSD module 7 (***Figure 12e***) from the computer.

Figure 12
M.2 SSD-1, 2 & 3 Module Removal (cont'd)

e. Remove the module.

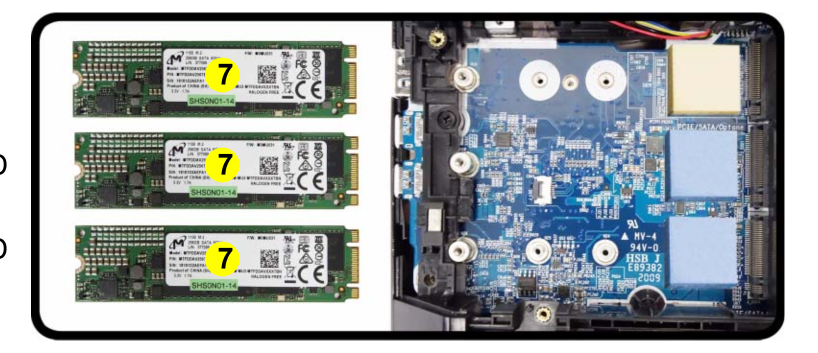
7. Reverse the process to install a new module. Make sure that the thermal pad A, B & C are in placed as shown below.

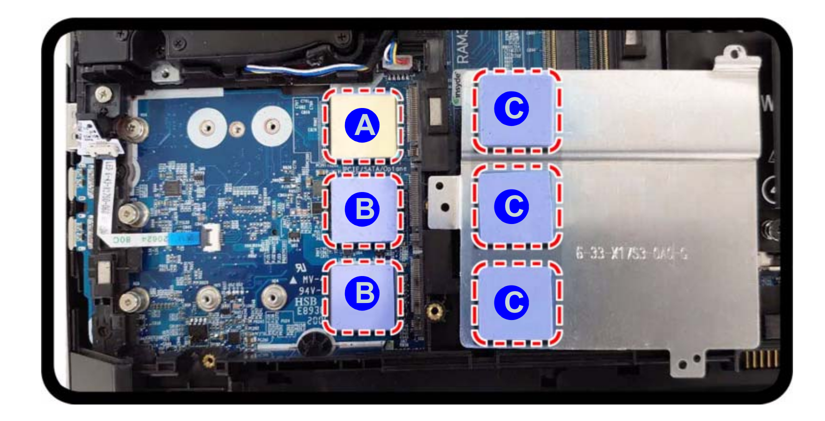
e.

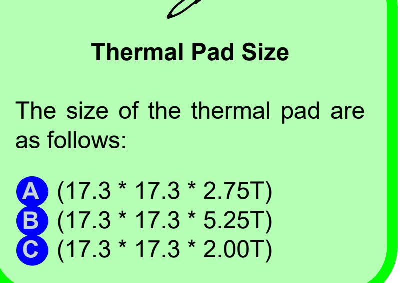
PCIE SSD

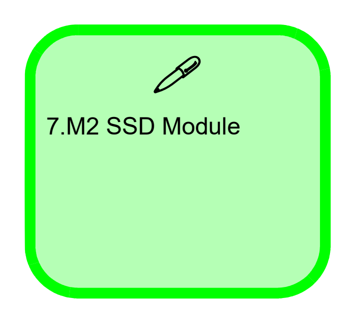
PCIE/SATA SSD

PCIE/SATA SSD









M.2 SSD-4 Module Removal Procedure

1. Turn **off** the computer, turn it over, remove the battery (*page 2 - 5*) and bottom cover (*page 2 - 6*).
2. The M.2 SSD module will be visible at point **1** on the mainboard (*Figure 11a*).
3. Remove the screw **2** (*Figure 11b*).
4. The M.2 SSD module **3** (*Figure 11c*) will pop-up, and you can remove it from the computer.
5. Reverse the process to install a new module.

Figure 13
M.2 SSD-4 Module Removal

a. Locate the M.2 SSD.
b. Remove the screw.
c. The M.2 SSD module will pop up.

a.



b.



SATA SSD

c.







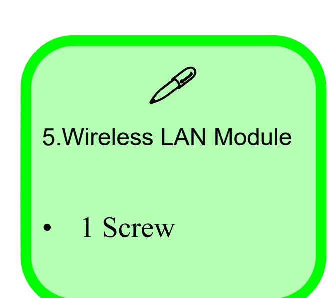
3.M2 SATA SSD Module

- 1 Screw

Figure 14
Wireless LAN Module Removal

a. Locate the WLAN.
b. Disconnect the cables and remove the screw.
c. The WLAN module will pop up.

Note: Make sure you reconnect the antenna cable to the “1 + 2” socket (***Figure 14b***).



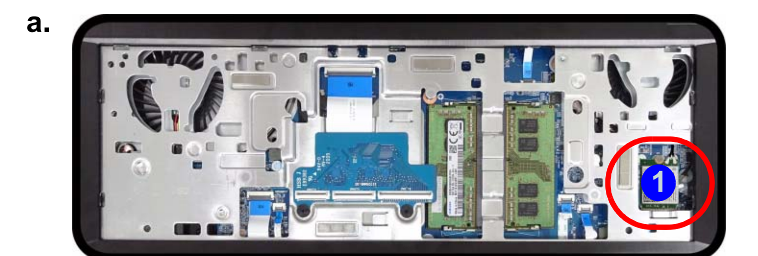
5.Wireless LAN Module

- 1 Screw

Removing the Wireless LAN Module

1. Turn **off** the computer, turn it over, remove the battery (***page 2 - 5***) and keyboard (***page 2 - 12***).
2. The Wireless LAN module will be visible at point **1** on the mainboard (***Figure 14a***).
3. Carefully disconnect the cables **2** & **3**, and then remove the screw **4** (***Figure 14b***)
4. The Wireless LAN module **5** (***Figure 14c***) will pop-up, and you can remove it from the computer.
5. Reverse the process to install a new module.

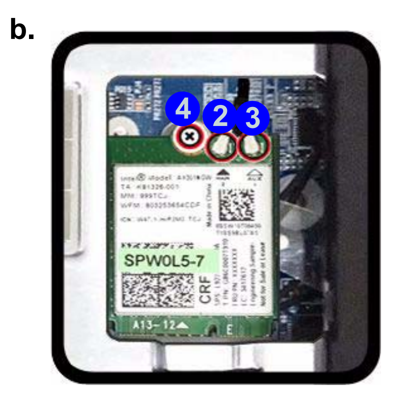
a.



c.



b.





Wireless LAN, Combo Module Cables

Note that the cables for connecting to the antennae on WLAN, WLAN & Bluetooth Combo modules are not labelled. The cables/covers (each cable will have either a black or transparent cable cover) are color coded for identification as outlined in the table below.

Module Type	Antenna Type	Cable Color	Cable Cover Type
WLAN/WLAN & Bluetooth Combo	WL 1	Black	Transparent
	WL 2	Black	White

Cable 1 is usually connected to antenna 1 on the module, and cable 2 to antenna 2.

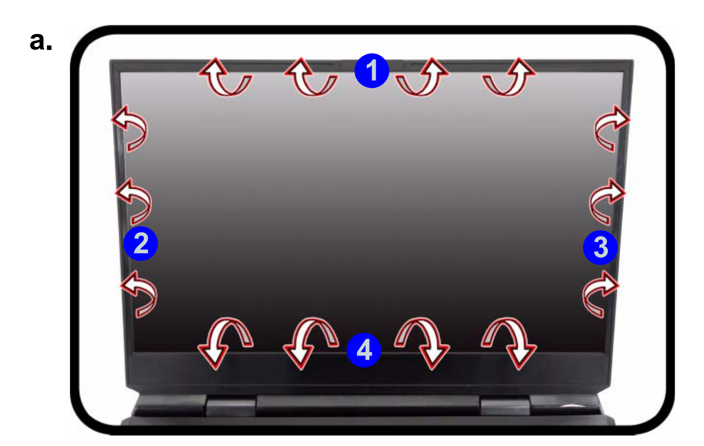
Figure 15
CCD Removal

a. Carefully release the mylar frame of the LCD panel at the points indicated by the arrows.
b. Remove the LCD front cover.

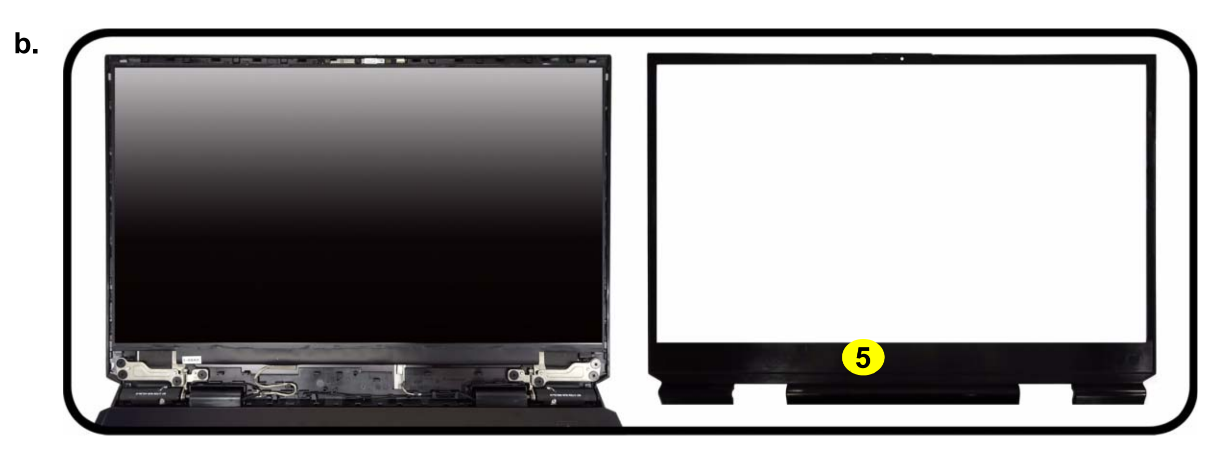
Removing the CCD

1. Turn **off** the computer, turn it over to remove the battery (*page 2 - 5*).
2. Lay the computer down on a flat surface with the top case up forming a 130 degree angle.
3. Carefully run your fingers around the mylar frame of the LCD panel to lift at points 1 - 4 as indicated by the arrows (*Figure 15a*).
4. Remove the LCD front cover 5 (*Figure 15b*).

a.



b.





5. LCD Front Cover

5. Disconnect the cable 6 from the locking collar socket by using a flat-head screwdriver to pry the locking collar pins 7 away from the base (***Figure 16c***).
6. Remove the CCD module 8 (***Figure 16d***).
7. Reverse the process to install a new CCD module.

Figure 16

CCD Removal (cont'd)

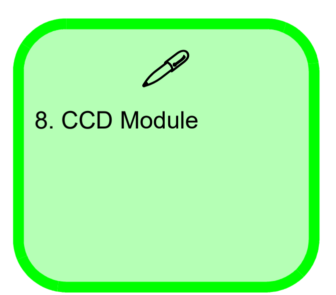
c. Disconnect the cable from the locking collar socket.

d. Remove the CCD module.

c.

d.





8. CCD Module

Appendix A:Part Lists

This appendix breaks down the ***X170SM*** series notebook's construction into a series of illustrations. The component part numbers are indicated in the tables opposite the drawings.

Note: This section indicates the *manufacturer's* part numbers. Your organization may use a different system, so be sure to cross-check any relevant documentation.

Note: Some assemblies may have parts in common (especially screws). However, the part lists DO NOT indicate the total number of duplicated parts used.

Note: Be sure to check any update notices. The parts shown in these illustrations are appropriate for the system at the time of publication. Over the product life, some parts may be improved or re-configured, resulting in *new* part numbers.

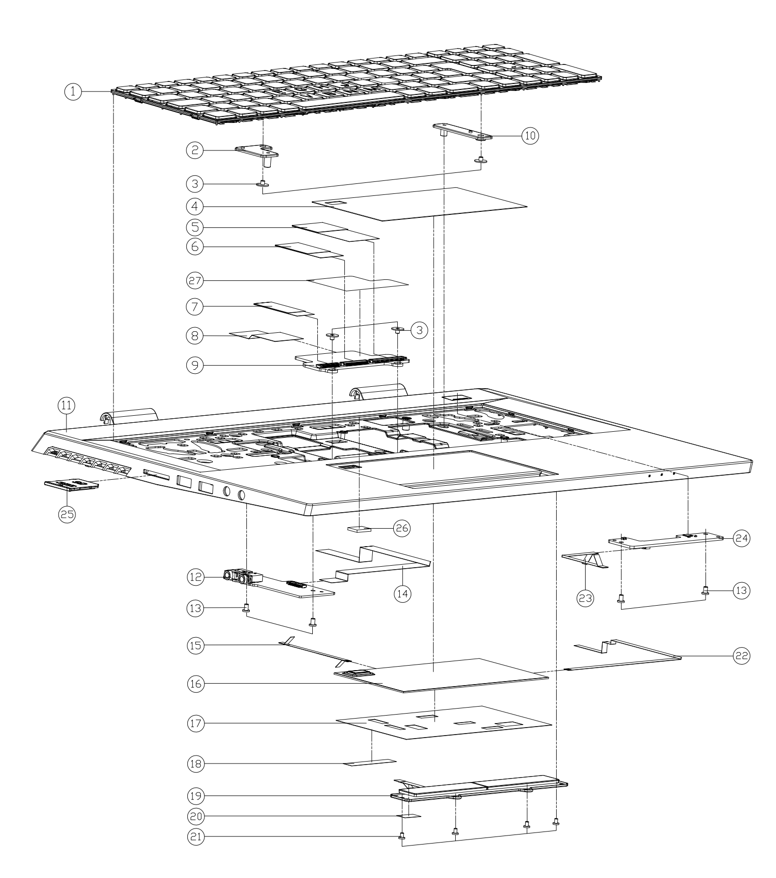
Part List Illustration Location

The following table indicates where to find the appropriate part list illustration.

Table A - 1
Part List Illustration Location

Part	
Top	*page A - 3*
Bottom	*page A - 4*
Main Board	*page A - 5*
LCD	*page A - 6*
VGA-G1	*page A - 7*
VGA-G2	*page A - 8*
Holder	*page A - 9*

Top



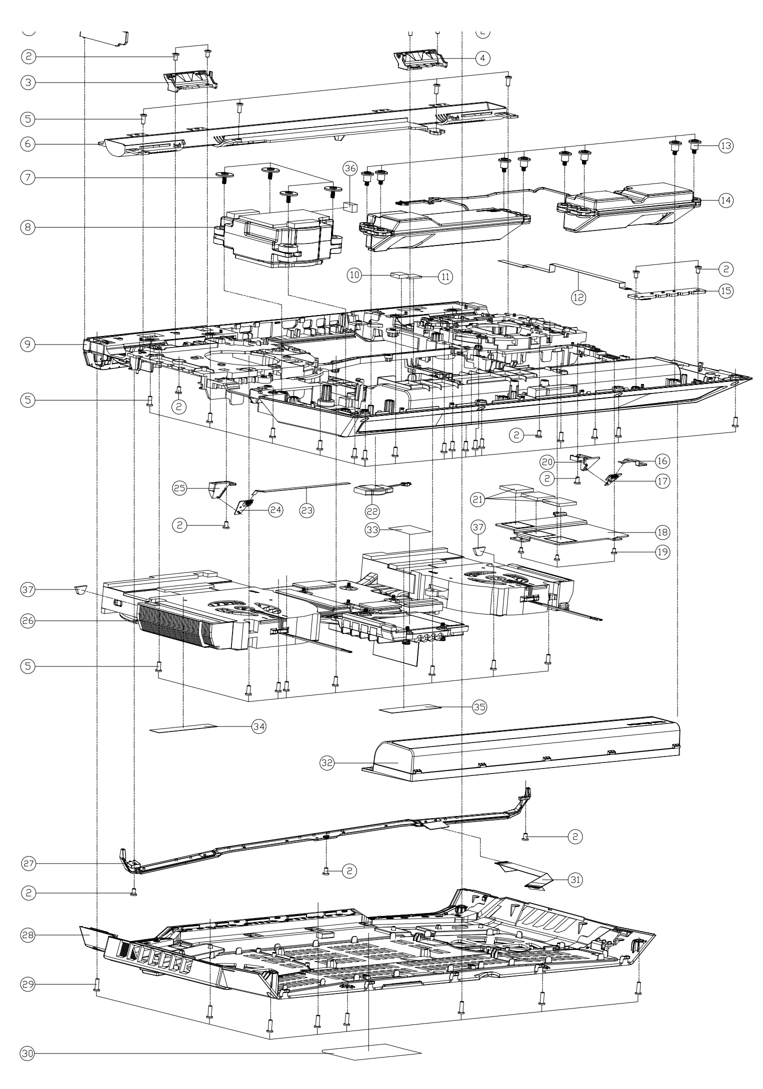
ITEM	PART NAME	PART NO	REMARK
1	LED PER KEY NKRO KB USA CVM19N23US430 X170SM-G BLACK WHITE SILVER LINING PRINTING ISOLATION WITH VIDEO KEY (332.95MM)+FA-1022 K/B FRAME	6-80-X17S0-011-1	
2	KB TRANSFER BKT-1 X170SM-G	6-33-X17S2-050-G	
3	SCREW M2.5*2.5L KI BK/Z ICT NY(Ø8,T=0.6)	6-35-B6125-2R5	
4	TP MYLAR X170SM-G	6-40-X17S2-030-G	
5	FFC CABLE FOR KB TO PCB-3 L=80MM 5V PITCH 1.0/26PIN (QX) X170SM	6-43-X17S0-040	
6	FFC CABLE FOR KB TO PCB-2 L=75MM 5V PITCH 0.5/40PIN (QX) X170SM	6-43-X17S0-030	
7	FFC CABLE FOR KB TO PCB-1 L=75MM 5V PITCH 0.5/30PIN (QX) X170SM	6-43-X17S0-020	
8	FFC CABLE FOR KB PCB TO MB L=45MM 5V PITCH 0.5/50PIN (QX) X170SM	6-43-X17S0-080	
9	KEYBOARD BOARD V2.0 X170SM	6-77-X17S7-D02	
10	KB TRANSFER BKT-2 X170SM-G	6-33-X17S2-060-G	
11	TOP CASE MODULE X170SM-G (SXFI AUDIO)(KAPOK)	6-39-X17S2-012-GS	
12	AUDIO BOARD V1.0 X170SM	6-77-X17S8-D11	
13	SCREW M2.5*4L (D=4.6,T=0.8) KI NI ICT NY	6-35-B1125-4RA	
14	FFC CABLE FOR AUDIO TO MB L=210MM 5V PITCH 0.5/22PIN(QX) X170SM	6-43-X17S0-0C0	
15	FFC CABLE FOR FP TO MB L=66MM 5V PITCH 0.5/6 PIN (QX) X170SM	6-43-X17S0-0A0	
16	SECURE PAD SYNAPTICS TM-P3621-001 I2C+PS2 (130*67MM) X170SM-G	6-49-X17S3-011-G	
17	TP MYLAR PET X170SM-G	6-40-X17S2-012-G	
18	CONDUCTIVE CLOTH TC X170SM-G	6-47-X17S2-010-G	
19	FUNCTION KEY FOR CLICK BUTTON MODULE X170SM-G	6-23-KX17S-G10	
20	TOP CASE MYLAR FR83 25*7*0.05 P180HM	6-40-P1802-030	
21	SCREW M2*3L KI NI ICT NY (DD=Ø4.0,DT=0.8)	6-35-B1120-3RD	
22	FFC CABLE FOR TP TO MB L=205MM 3.3V PITCH 0.5/8PIN () X170SM	6-43-X17S0-071	
23	FFC CABLE FOR POWER TO MB L= 73MM 5V PITCH 0.5/8PIN(QX) X170SM	6-43-X17S0-0B1	
24	POWER SWITCH BOARD V2.0A X170SM	6-77-X17SS-D02A	
25	DUMMY 3IN1 NON PUSH TYPE PC+ABS (C7230P-701DE)(CHANGE) W970SUW	6-42-W9708-011	
26	THERMAL PAD RS300 10*7*2MM X170SM	6-48-X17S2-0F0	
27	MYLAR FOR KB BOARD (55*28*2.5T) X170SM-G	6-40-X17S2-060-G	

Figure A - 1
Top

A.Part Lists

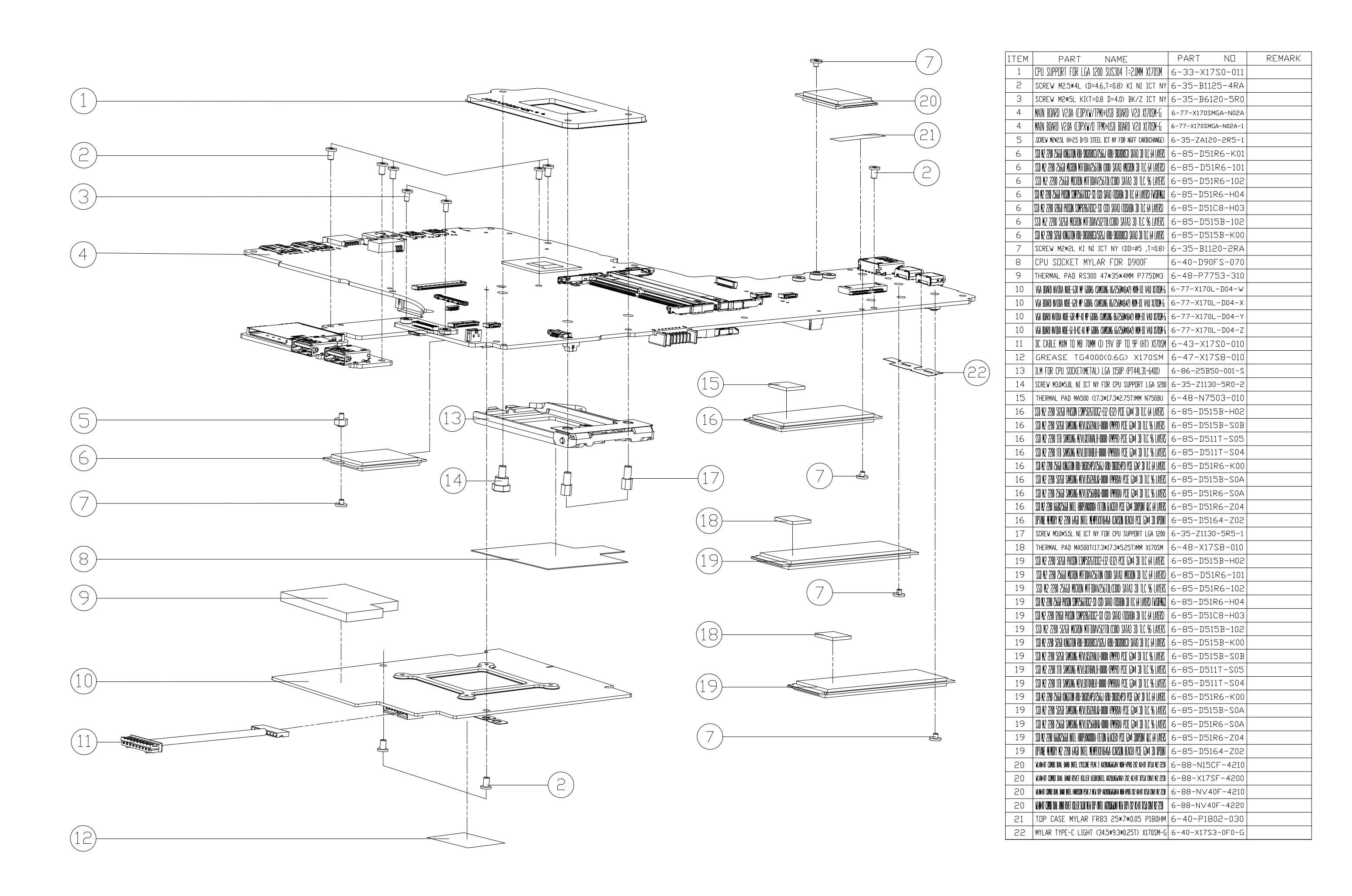
Bottom

Figure A - 2
Bottom



2	SCREW M2.5*4L (D=4.6,T=0.8) KI NI ICT NY	6-35-B1125-4RA	
3	BOTTOM HINGE COVER L PC+ABS (COVESTRO FR3021+BK) X170SM-G	6-42-X17S3-012-G	
4	BOTTOM HINGE COVER R PC+ABS (COVESTRO FR3021+BK) X170SM-G	6-42-X17S3-062-G	
5	SCREW M2.5*6L K BZ ICT NY	6-35-82125-6RA	
6	TOP HINGE CAP M X170SM-G	6-39-X17S2-04B-G	
7	SCREW M2.5*6L KI BZ NI ICT NY W/WAS (WASHER OD=13.0) FOR SPEAKER	6-35-B2025-6R0	
8	WOOFER+CABLE (71.35*89.4) 37MM 5W 4.0? 2P BOX 638944 (FOSTER) X170SM-G	6-23-5X17S-0W1-G	
9	BOTTOM CASE MODULE X170SM-G	6-39-X17S3-012-G	
10	THERMAL PAD RS300 9*9*2.5MM X170SM	6-48-X17S2-0D0	
11	THERMAL PAD RS300 12*9*1.25MM X170SM	6-48-X17S2-0E0	
12	FFC CABLE FOR LED TO MB L=148MM 5V PITCH 0.5/10PIN (QX) X170SM	6-43-X17S0-091	
13	SCREW M2.5*8.0L BZ NI ICT NY W/WAS (WASHER OD=9.0) FOR SPEAKER	6-35-Z2025-8R0	
14	SPEAKER+CABLE R(154.2*34.1)?L(121.4*35.8) (R) 216.5MM/ (L) 111.5MM 3W 4.0? 4P BOX 638944 (FOSTER) X170SM-G	6-23-5X17S-0S1-G	
15	LED BOARD V2.0 X170SM	6-77-X17S4-D02	
16	FFC LIGHTING-R TO MB L=57MM 5V PITCH 0.5/6PIN (QX)X170SM	6-43-X17S0-060	
17	LIGHT R PCB X170SM-G	6-23-RX17S-020-G	
18	AL THERMAL FOR SSD (AL5052 0.8T+DFRD117) X170SM-G	6-33-X17S3-0A0-G	ALL THERMAL FOR SSD
19	.SCREW M2*3L KI NI ICT NY (DD=ø4.0,DT=0.8)	6-35-B1120-3RD	
20	FRONT R LIGHTING HOLDER PC+ABS (COVESTRO FR3021+BK) X170SM-G	6-42-X17S3-051-G	
21	THERMAL PAD MA500 (17.3*17.3*2T)MM X170SM	6-48-X17S8-020	
22	BAT. 20MM 3V 220MAH W/CABLE 55MM BCR2032H5.5VM1UB (SHIHNO)	6-23-22015-TE0	
23	FFC LIGHTING-L TO MB L=97MM 5V PITCH 0.5/8PIN (QX)X170SM	6-43-X17S0-050	
24	LIGHT L PCB X170SM-G	6-23-RX17S-010-G	
25	FRONT L LIGHTING HOLDER PC+ABS (COVESTRO FR3021+BK) X170SM-G	6-42-X17S3-071-G	
26	HEATSINK MODULE X170SM	6-31-X17SN-103	
27	(PRE-PROCESS) REAR LIGHTING MODULE X170SM-G	6-78-X170SMG3-020	
28	CPU COVER MODULE X170SM-G	6-42-X17S8-102-G	
29	.SCREW M2.5*8L KI BK/Z NY ICT	6-35-B6125-8R0	
30	PRODUCT LABEL FOR X170SM-G(CHANGE RATING)	6-45-X170SMG3-012	
31	FFC LIGHTING-REAR TO MB L=95MM 5V PITCH 0.5/22PIN (QX)X170SM	6-43-X17S0-0D0	
32	BAT.P S LI 14.4V/6.8AH/97WH 4S2P SMP/SDI (BQ40Z50) 980Q2251H (6700MAH) X170SM	6-87-X17SS-91C01	
33	GREASE TG4000(0.6G)X170SM	6-47-X17S8-010	FOR W/ VGA CARD AND W/O VGA CARD
34	MYLAR THM LIGHT-1 (58.65*4.8*0.25T) X170SM	6-40-X17S3-0C0-G	
35	MYLAR THM LIGHT-2 (47.9*7.75*0.25T) X170SM	6-40-X17S3-0D0-G	
36	SPONGE FOR WOOFER SM55(8.5*4.5*2.65T) X170SM-G	6-47-0019A-08K	
37	SPONGE THM LIGHT-1 (13*6.85*2.65T) X170SM-G	6-47-0019A-13S	

Main Board

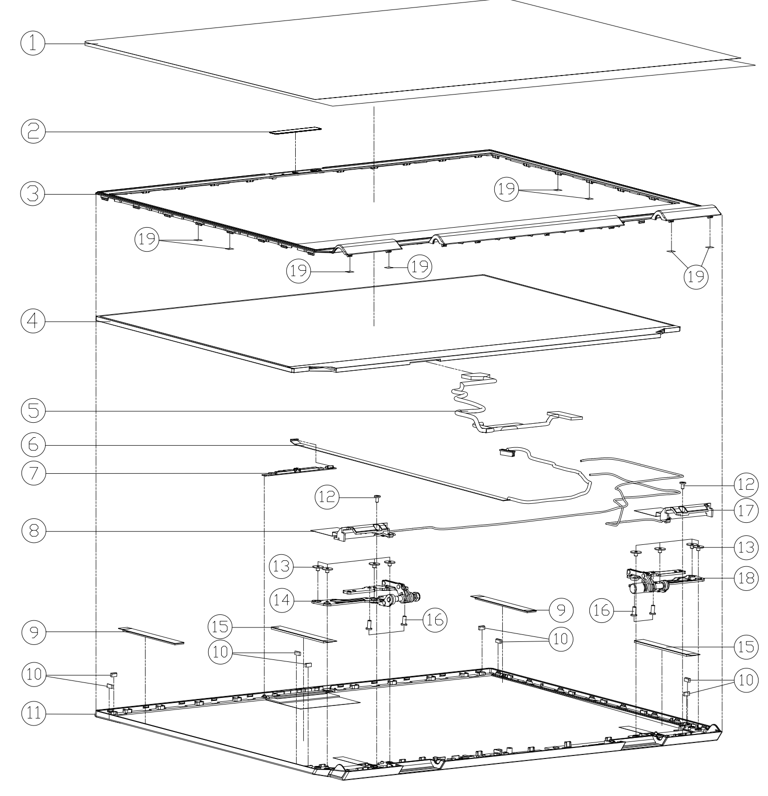


ITEM	PART NAME	PART NO	REMARK
1	CPU SUPPORT FOR LGA 1200 SUS304 T=2.0MM X170SM	6-33-X17S0-011	
2	SCREW M2.5*4L (D=4.6,T=0.8) KI NI ICT NY	6-35-B1125-4RA	
3	SCREW M2*5L KI(T=0.8 D=4.0) BK/Z ICT NY	6-35-B6120-5R0	
4	MAIN BOARD V2.0A (EDP)(W/TPM)+USB BOARD V2.0 X170SM-G	6-77-X170SMGA-N02A	
4	MAIN BOARD V2.0A (EDP)(W/O TPM)+USB BOARD V2.0 X170SM-G	6-77-X170SMGA-N02A-1	
5	SCREW M2*2.5L (H=2.5 D=5) STEEL ICT NY FOR NGFF CARD(CHANGE)	6-35-ZA120-2R5-1	
6	SSD M2 2280 256GB KINGSTON RBU-SNS8180S3/256GJ (RBU-SNS8180S3) SATA3 3D TLC 64 LAYERS	6-85-D51R6-K01	
6	SSD M2 2280 256GB MICRON MTFDDAV256TBN (1100) SATA3 (MICRON 3D TLC 64 LAYERS)	6-85-D51R6-101	
6	SSD M2 2280 256GB MICRON MTFDDAV256TDL(1300) SATA3 3D TLC 96 LAYERS	6-85-D51R6-102	
6	SSD M2 2280 256GB PHISON SSMP256GTB3C2-S11 (S11) SATA3 (TOSHIBA 3D TLC 64 LAYERS) FW:SBFM61.1	6-85-D51R6-H04	
6	SSD M2 2280 128GB PHISON SSMP128GTB3C2-S11 (S11) SATA3 (TOSHIBA 3D TLC 64 LAYERS)	6-85-D51C8-H03	
6	SSD M2 2280 512GB MICRON MTFDDAV512TDL(1300) SATA3 3D TLC 96 LAYERS	6-85-D515B-102	
6	SSD M2 2280 512GB KINGSTON RBU-SNS8180S3/512GJ (RBU-SNS8180S3) SATA3 3D TLC 64 LAYERS	6-85-D515B-K00	
7	SCREW M2*2L KI NI ICT NY (DD=ø5 ,T=0.8)	6-35-B1120-2RA	
8	CPU SOCKET MYLAR FOR D900F	6-40-D90FS-070	
9	THERMAL PAD RS300 47*35*4MM P775DM3	6-48-P7753-310	
10	VGA BOARD NVIDIA N18E-G3R MP GDDR6 (SAMSUNG 8G/256M*16*2) MXM-III V4.0 X170SM-G	6-77-X170L-D04-W	
10	VGA BOARD NVIDIA N18E-G2R MP GDDR6 (SAMSUNG 8G/256M*16*2) MXM-III V4.0 X170SM-G	6-77-X170L-D04-X	
10	VGA BOARD NVIDIA N18E-G1R-MP-A1 MP GDDR6 (SAMSUNG 8G/256M*16*2) MXM-III V4.0 X170SM-G	6-77-X170L-D04-Y	
10	VGA BOARD NVIDIA N18E-G1-B-KC-A1 MP GDDR6 (SAMSUNG 6G/256M*16*2) MXM-III V4.0 X170SM-G	6-77-X170L-D04-Z	
11	DC CABLE MXM TO MB 70MM (I) 19V 8P TO 9P (HT) X170SM	6-43-X17S0-010	
12	GREASE TG4000(0.6G) X170SM	6-47-X17S8-010	
13	ILM FOR CPU SOCKET(METAL) LGA 1150P (PT44L31-6401)	6-86-25B50-001-S	
14	SCREW M3.0*5.0L NI ICT NY FOR CPU SUPPORT LGA 1200	6-35-Z1130-5R0-2	
15	THERMAL PAD MA500 (17.3*17.3*2.75T)MM N750BU	6-48-N7503-010	
16	SSD M2 2280 512GB PHISON ESMP512GTB3C2-E12 (E12) PCIE G3*4 3D TLC 64 LAYERS	6-85-D515B-H02	
16	SSD M2 2280 512GB SAMSUNG MZVLQ512HALU-00000 (PM991) PCIE G3*4 3D TLC 96 LAYERS	6-85-D515B-S0B	
16	SSD M2 2280 1TB SAMSUNG MZVLQ1T0HALB-00000 (PM991) PCIE G3*4 3D TLC 96 LAYERS	6-85-D511T-S05	
16	SSD M2 2280 1TB SAMSUNG MZVLB1T0HBLR-00000 (PM981A) PCIE G3*4 3D TLC 96 LAYERS	6-85-D511T-S04	
16	SSD M2 2280 256GB KINGSTON RBU-SNS8154P3/256GJ (RBU-SNS8154P3) PCIE G3*2 3D TLC 64 LAYERS	6-85-D51R6-K00	
16	SSD M2 2280 512GB SAMSUNG MZVLB512HBJQ-00000 (PM981A) PCIE G3*4 3D TLC 96 LAYERS	6-85-D515B-S0A	
16	SSD M2 2280 256GB SAMSUNG MZVLB256HBHQ-00000 (PM981A) PCIE G3*4 3D TLC 96 LAYERS	6-85-D51R6-S0A	
16	SSD M2 2280 16GB/256GB INTEL HBRPEKNX0101A (TETON GLACIER) PCIE G3*4 3DXPOINT QLC 64 LAYERS	6-85-D51R6-Z04	
16	OPTANE MEMORY M2 2280 64GB INTEL MEMPEK1F064GA (CARSON BEACH) PCIE G3*4 3D XPOINT	6-85-D5164-Z02	
17	SCREW M3.0*5.5L NI ICT NY FOR CPU SUPPORT LGA 1200	6-35-Z1130-5R5-1	
18	THERMAL PAD MA500T(17.3*17.3*5.25T)MM X170SM	6-48-X17S8-010	
19	SSD M2 2280 512GB PHISON ESMP512GTB3C2-E12 (E12) PCIE G3*4 3D TLC 64 LAYERS	6-85-D515B-H02	
19	SSD M2 2280 256GB MICRON MTFDDAV256TBN (1100) SATA3 (MICRON 3D TLC 64 LAYERS)	6-85-D51R6-101	
19	SSD M2 2280 256GB MICRON MTFDDAV256TDL(1300) SATA3 3D TLC 96 LAYERS	6-85-D51R6-102	
19	SSD M2 2280 256GB PHISON SSMP256GTB3C2-S11 (S11) SATA3 (TOSHIBA 3D TLC 64 LAYERS) FW:SBFM61.1	6-85-D51R6-H04	
19	SSD M2 2280 128GB PHISON SSMP128GTB3C2-S11 (S11) SATA3 (TOSHIBA 3D TLC 64 LAYERS)	6-85-D51C8-H03	
19	SSD M2 2280 512GB MICRON MTFDDAV512TDL(1300) SATA3 3D TLC 96 LAYERS	6-85-D515B-102	
19	SSD M2 2280 512GB KINGSTON RBU-SNS8180S3/512GJ (RBU-SNS8180S3) SATA3 3D TLC 64 LAYERS	6-85-D515B-K00	
19	SSD M2 2280 512GB SAMSUNG MZVLQ512HALU-00000 (PM991) PCIE G3*4 3D TLC 96 LAYERS	6-85-D515B-S0B	
19	SSD M2 2280 1TB SAMSUNG MZVLQ1T0HALB-00000 (PM991) PCIE G3*4 3D TLC 96 LAYERS	6-85-D511T-S05	
19	SSD M2 2280 1TB SAMSUNG MZVLB1T0HBLR-00000 (PM981A) PCIE G3*4 3D TLC 96 LAYERS	6-85-D511T-S04	
19	SSD M2 2280 256GB KINGSTON RBU-SNS8154P3/256GJ (RBU-SNS8154P3) PCIE G3*2 3D TLC 64 LAYERS	6-85-D51R6-K00	
19	SSD M2 2280 512GB SAMSUNG MZVLB512HBJQ-00000 (PM981A) PCIE G3*4 3D TLC 96 LAYERS	6-85-D515B-S0A	
19	SSD M2 2280 256GB SAMSUNG MZVLB256HBHQ-00000 (PM981A) PCIE G3*4 3D TLC 96 LAYERS	6-85-D51R6-S0A	
19	SSD M2 2280 16GB/256GB INTEL HBRPEKNX0101A (TETON GLACIER) PCIE G3*4 3DXPOINT QLC 64 LAYERS	6-85-D51R6-Z04	
19	OPTANE MEMORY M2 2280 64GB INTEL MEMPEK1F064GA (CARSON BEACH) PCIE G3*4 3D XPOINT	6-85-D5164-Z02	
20	WLAN+BT COMBO DUAL BAND INTEL CYCLONE PEAK 2 AX201NGW.GWV NON-VPRO 2X2 AX+BT BT5.0 M2 2230	6-88-N15CF-4210	
20	WLAN+BT COMBO DUAL BAND RIVET KILLER 1650I(INTEL AX201NGW.NV) 2X2 AC+BT BT5.0 CNVI M2 2230	6-88-X17SF-4200	
20	WLAN+BT COMBO DUAL BAND INTEL HARRISON PEAK 2 NEW OTP AX201NGW.GWV NON-VPRO 2X2 AX+BT BT5.0 CNVI M2 2230	6-88-NV40F-4210	
20	WLAN+BT COMBO DUAL BAND RIVET KILLER 1650I NEW OTP (INTEL AX201NGW.NV NEW OTP) 2X2 AC+BT BT5.0 CNVI M2 2230	6-88-NV40F-4220	
21	TOP CASE MYLAR FR83 25*7*0.05 P180HM	6-40-P1802-030	
22	MYLAR TYPE-C LIGHT (34.5*9.3*0.25T) X170SM-G	6-40-X17S3-0F0-G	

Figure A - 3
Main Board

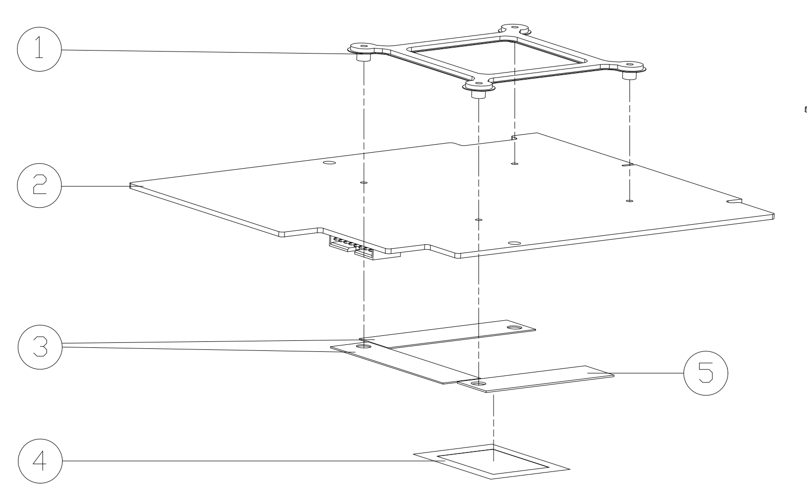
LCD

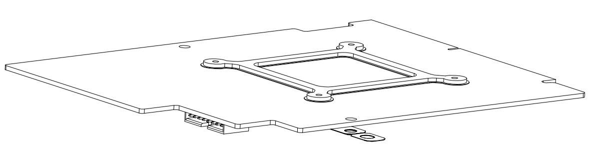
Figure A - 4
LCD



ITEM	PART NAME	PART NO	REMARK
1	LCD PROTECT MYLAR BOPP NB70TJ1	6-40-NB708-010	
2	CCD LENS PMMA(46.3*7.215) N150ZU	6-42-N15Z1-020-1	
3	FRONT COVER MODULE X170SM-G	6-39-X17S1-012-G	
4	LCD N17.3" FHD/WVA/240HZ/N7/NON GT/EDP AU B173HAN05.0 3.5MM	6-50-NBB35-G160	
4	LCD N17.3" UHD/WVA/SW G-SYNC/ADOBE 100%/NON GT/EDP AU B173ZAN03.0 (H/W:2A) 3.5MM	6-50-N1B35-G100	
4	LCD N17.3" FHD/WVA/144HZ/SW G-SYNC/N7/NON GT/EDP LG LP173WFG-SPB1 (EDID:C4) 3.5MM	6-50-NBB35-L123	
5	COAXIAL CABLE FOR EDP 300MM I 30V 40PIN (SHARP 15.6 240HZ) (HT/LW CON: LV06130-224) PB50RC	6-43-PB501-R10-1N	
5	COAXIAL CABLE FOR EDP 300MM 30V I 40 PIN (HL/LW CON:LV06130-224-HF) PB70EF	6-43-PB701-011-N	
6	WIRE TO FFC CABLE FOR CCD 450MM 30V 8P TO 12P P960EN	6-43-P960T-N11	
7	UVC CAMERA CHICONY FIX(RGB) CNFH3821003920LH 1M HD OV9734 N150ZU FW5404 W/WHITE-LED W/2D-MIC(NARROW BORDER WITH FFC)	6-88-N15ZC-5100	OPTION
7	UVC CAMERA BISON FIX(RGB) BNH419VXB-000 1M HD OV9734 N150ZU FW0601 W/WHITE-LED W/2D-MIC(NARROW BORDER WITH FFC)	6-88-N15ZC-4900	OPTION
8	ANTENNA IPEX4 WLAN WGT WL2 FPC OL 45X18MM 2.4G/5G L= 500MM X170SM	6-23-7X17S-021	
9	DOUBLE SIDE TAPE TOP (9X60X1P2T) X170SM-G	6-40-X17S1-020-G	
10	RUBBER 5*2.65*1.5 (PANTONE GLAY 4C)NB70TJ1	6-47-NB701-041	
11	BACK COVER MODULE X170SM-G	6-39-X17S1-022-G	
12	SCREW M2*4L KI NI ICT NY (DD=ø4.5,DT=0.8)	6-35-B1120-4RC	
13	SCREW M2.5*2.5L KI BK/Z ICT NY(ø8,T=0.6)	6-35-B6125-2R5	
14	HINGE L (SK7) X170SM-G	6-33-X17S1-0L1-G	
15	DOUBLE SIDE TAPE DOWN (9X60X1P7T) X170SM-G	6-40-X17S1-010-G	
16	.SCREW M2.5*6L K BZ ICT NY	6-35-82125-6RA	
17	ANTENNA IPEX4 WLAN WGT WL1 FPC OL 45X18MM 2.4G/5G L= 300MM X170SM	6-23-7X17S-011	
18	HINGE R (SK7) X170SM-G	6-33-X17S1-0R1-G	
19	MYLAR(7*6*0.15MM,BLACK) FOR P640RF	6-40-00150-760	

VGA-G1





ITEM	PART NAME	PART NO	REMARK
1	N18 VGA SUPPORTER M2 SUS430 P750TM1	6-33-P75FS-010	
2	VGA BOARD NVIDIA N18E-G1R-MP-A1 MP GDDR6 (SAMSUNG 8G/256M*16*2) MXM-III V4.0 --SMT/TOP X170SM-G	6-77-X170L-104-Y	FOR N18E-G1R-MP-A1
2	VGA BOARD NVIDIA N18E-G1R-MP-A1 MP GDDR6 (SAMSUNG 8G/256M*16*2) MXM-III V4.0 --SMT/BOT X170SM-G	6-77-X170L-204-Y	FOR N18E-G1R-MP-A1
2	VGA BOARD NVIDIA N18E-G1-B-KC-A1 MP GDDR6 (SAMSUNG 6G/256M*16*2) MXM-III V4.0 --SMT/TOP X170SM-G	6-77-X170L-104-Z	FOR N18E-G1-B-KC-A1
2	VGA BOARD NVIDIA N18E-G1-B-KC-A1 MP GDDR6 (SAMSUNG 6G/256M*16*2) MXM-III V4.0 --SMT/BOT X170SM-G	6-77-X170L-204-Z	FOR N18E-G1-B-KC-A1
3	EMI ABSORBER (45*11.5*0.3) FOR N17 G2 VGA P750DM2	6-47-P75DS-010	
4	N18E G1 G2 CHIP MYLAR PET (37.5*37.5*0.2) P775TM1	6-40-P77F3-010	
5	EMI ABSORBER (39*11.5*0.3) FOR N18 G3 VGA P750TM1	6-47-P75F2-010	

Figure A - 5
VGA-G1

A.Part Lists

VGA-G2

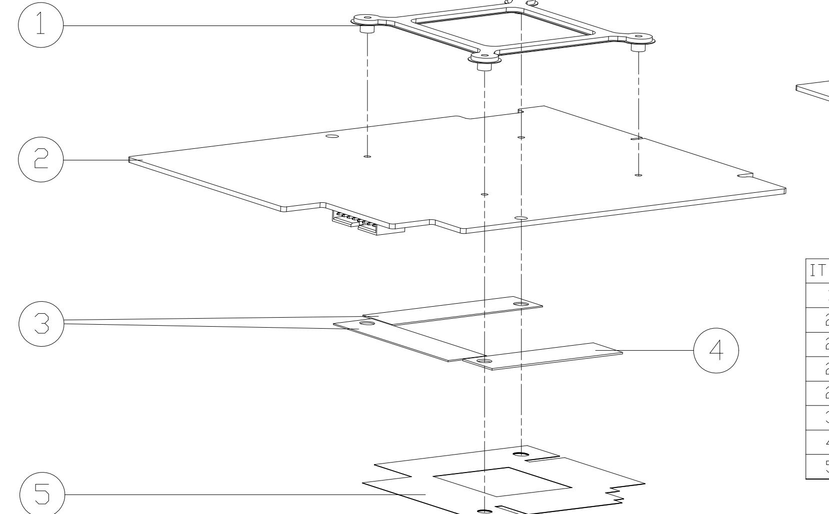
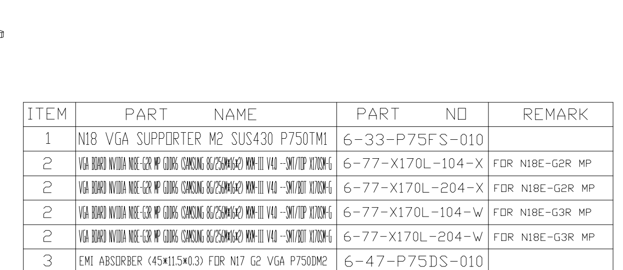
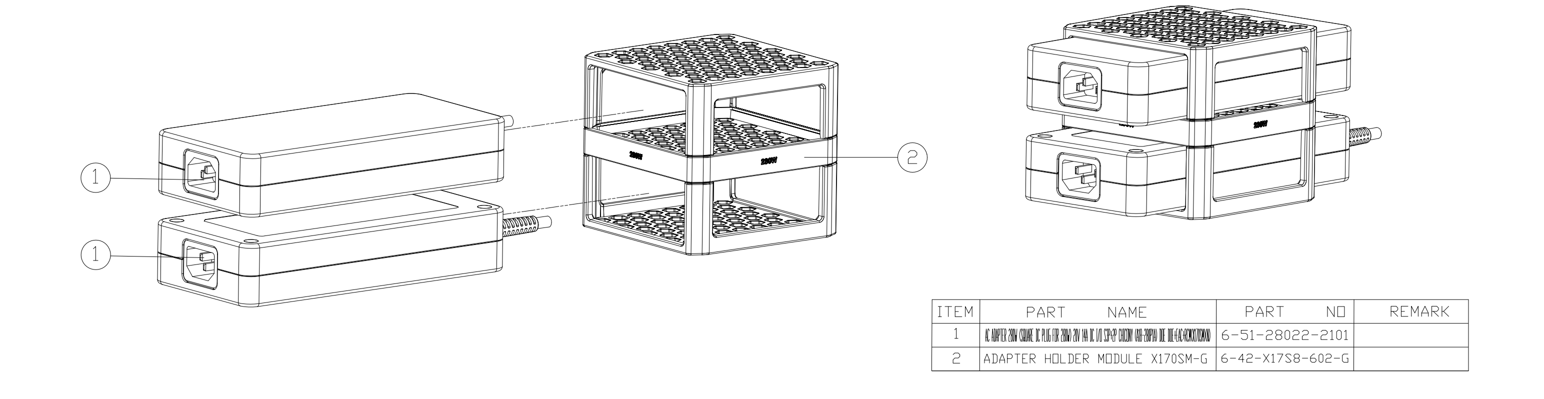


Figure A - 6
VGA-G2



ITEM	PART NAME	PART NO	REMARK
1	N18 VGA SUPPORTER M2 SUS430 P750TM1	6-33-P75FS-010	
2	VGA BOARD NVIDIA N18E-G2R MP GDDR6 (SAMSUNG 8G/256M*16*2) MXM-III V4.0 --SMT/TOP X170SM-G	6-77-X170L-104-X	FOR N18E-G2R MP
2	VGA BOARD NVIDIA N18E-G2R MP GDDR6 (SAMSUNG 8G/256M*16*2) MXM-III V4.0 --SMT/BOT X170SM-G	6-77-X170L-204-X	FOR N18E-G2R MP
2	VGA BOARD NVIDIA N18E-G3R MP GDDR6 (SAMSUNG 8G/256M*16*2) MXM-III V4.0 --SMT/TOP X170SM-G	6-77-X170L-104-W	FOR N18E-G3R MP
2	VGA BOARD NVIDIA N18E-G3R MP GDDR6 (SAMSUNG 8G/256M*16*2) MXM-III V4.0 --SMT/BOT X170SM-G	6-77-X170L-204-W	FOR N18E-G3R MP
3	EMI ABSORBER (45*11.5*0.3) FOR N17 G2 VGA P750DM2	6-47-P75DS-010	
4	EMI ABSORBER (39*11.5*0.3) FOR N18 G3 VGA P750TM1	6-47-P75F2-010	
5	EMI ABSORBER FOR N18-G3R X170SM-G	6-47-X17S3-070-G	

AC Holder



ITEM	PART NAME	PART NO	REMARK
1	AC ADAPTER 280W (SQUARE DC PLUG FOR 280W) 20V 14A DC I/O S3P+2P CHICONY (A18-280P1A) DOE DOE+EAC+RCM(X170SM(X))	6-51-28022-2101	
2	ADAPTER HOLDER MODULE X170SM-G	6-42-X17S8-602-G	

Figure A - 7
AC-Holder

Appendix B: Schematic Diagrams

This appendix has circuit diagrams of the ***X170SM*** notebook's PCB's. The following table indicates where to find the appropriate schematic diagram.

Table B - 1
SCHEMATIC DIAGRAMS

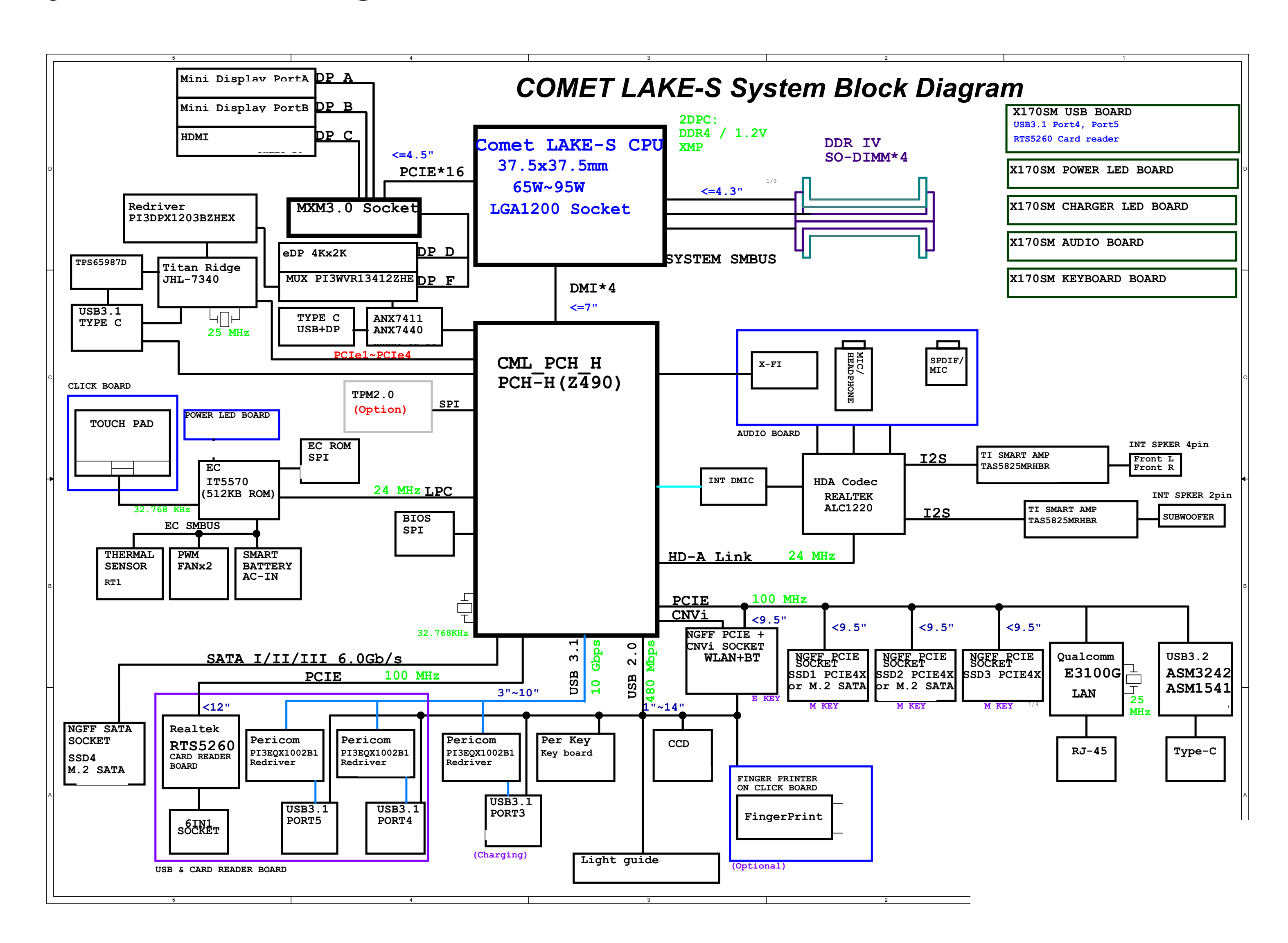


Version Note

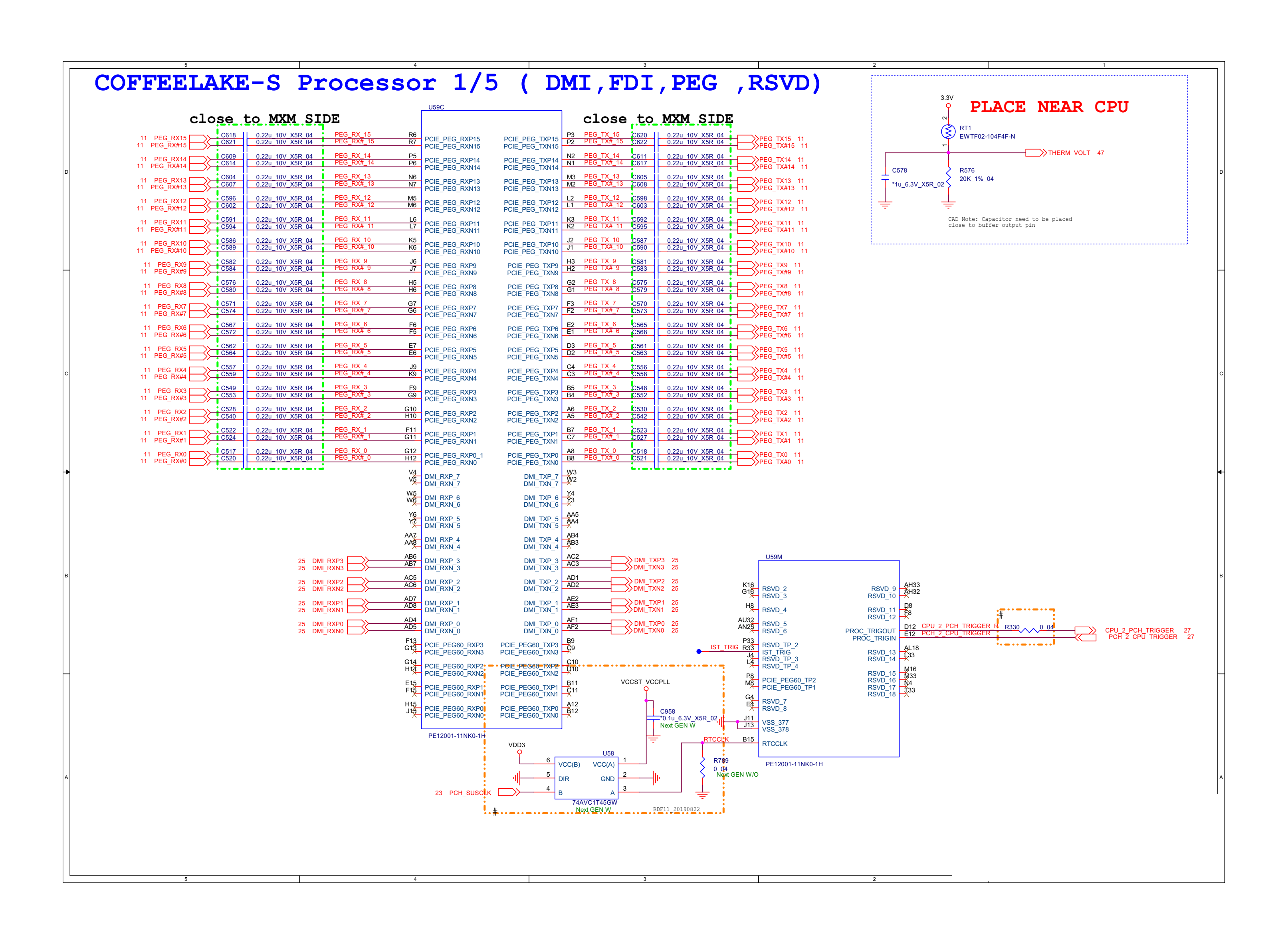
The schematic diagrams in this chapter are based upon version 6-7P-X17S6-003. If your mainboard (or other boards) are a later version, please check with the Service Center for updated diagrams (if required).

System Block Diagram

Sheet 1 of 71
System Block
Diagram



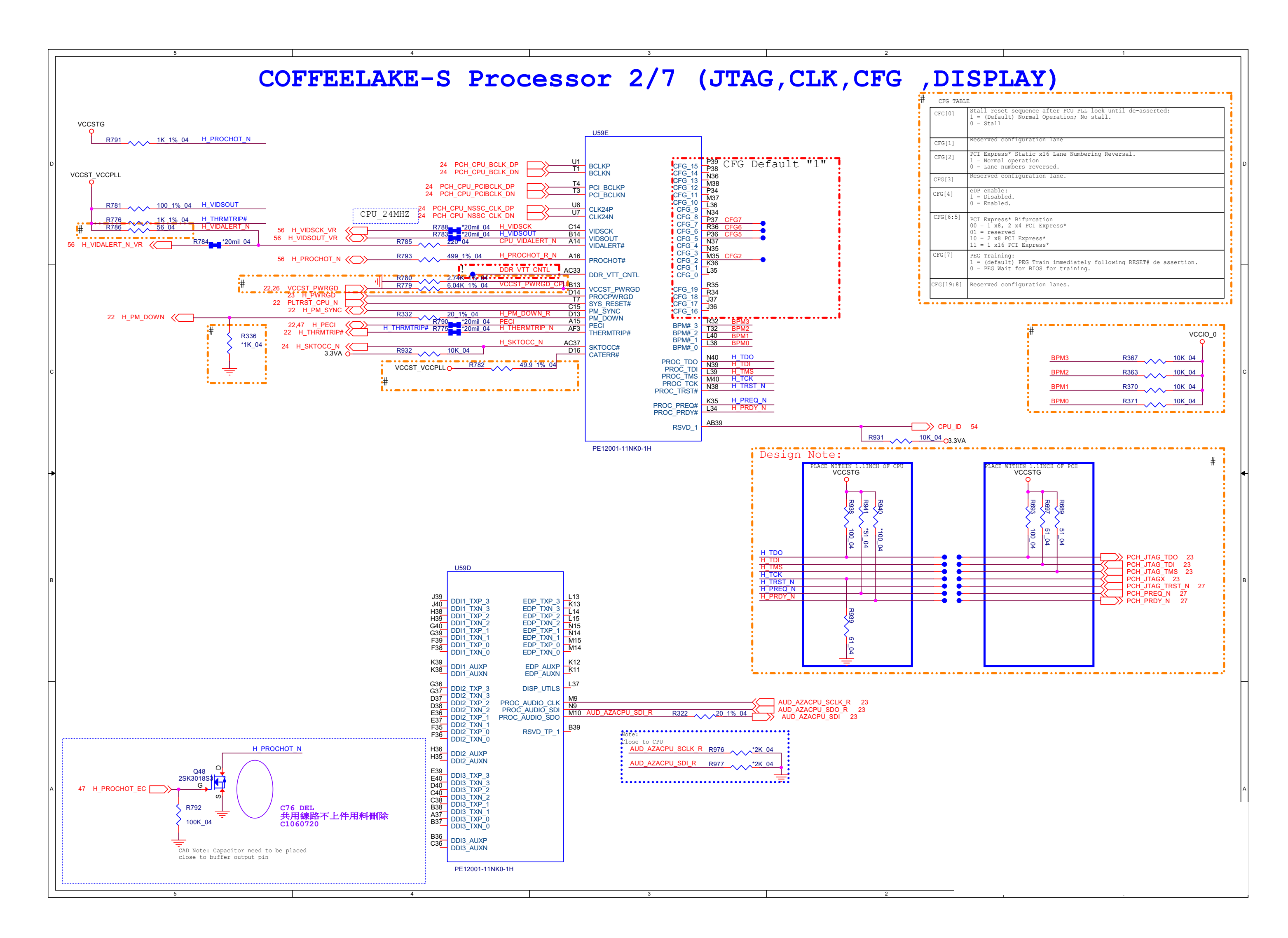
Processor 1/5



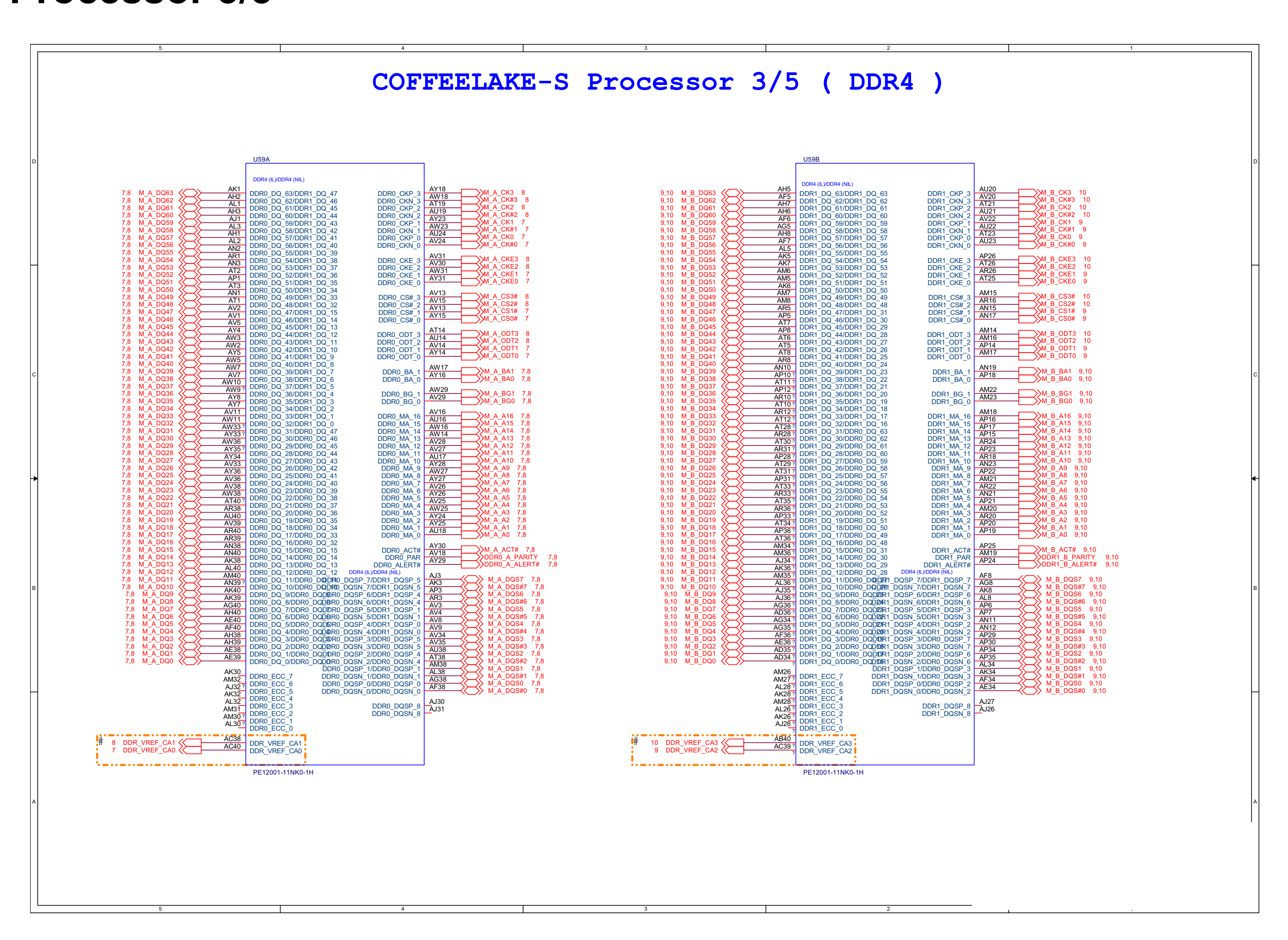
Sheet 2 of 71
Processor 1/5

Processor 2/5

Sheet 3 of 71
Processor 2/5



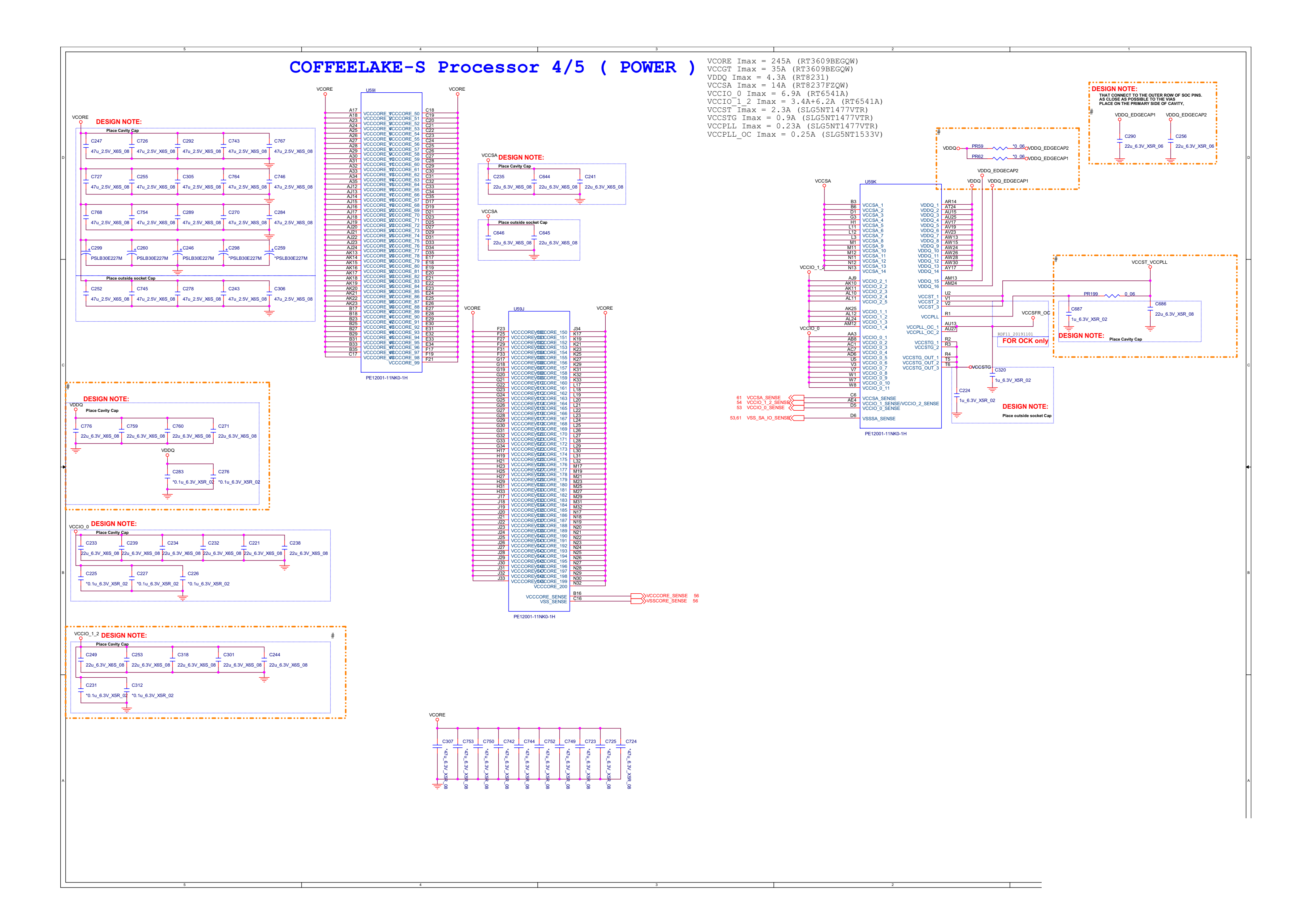
Processor 3/5



Sheet 4 of 71
Processor 3/5

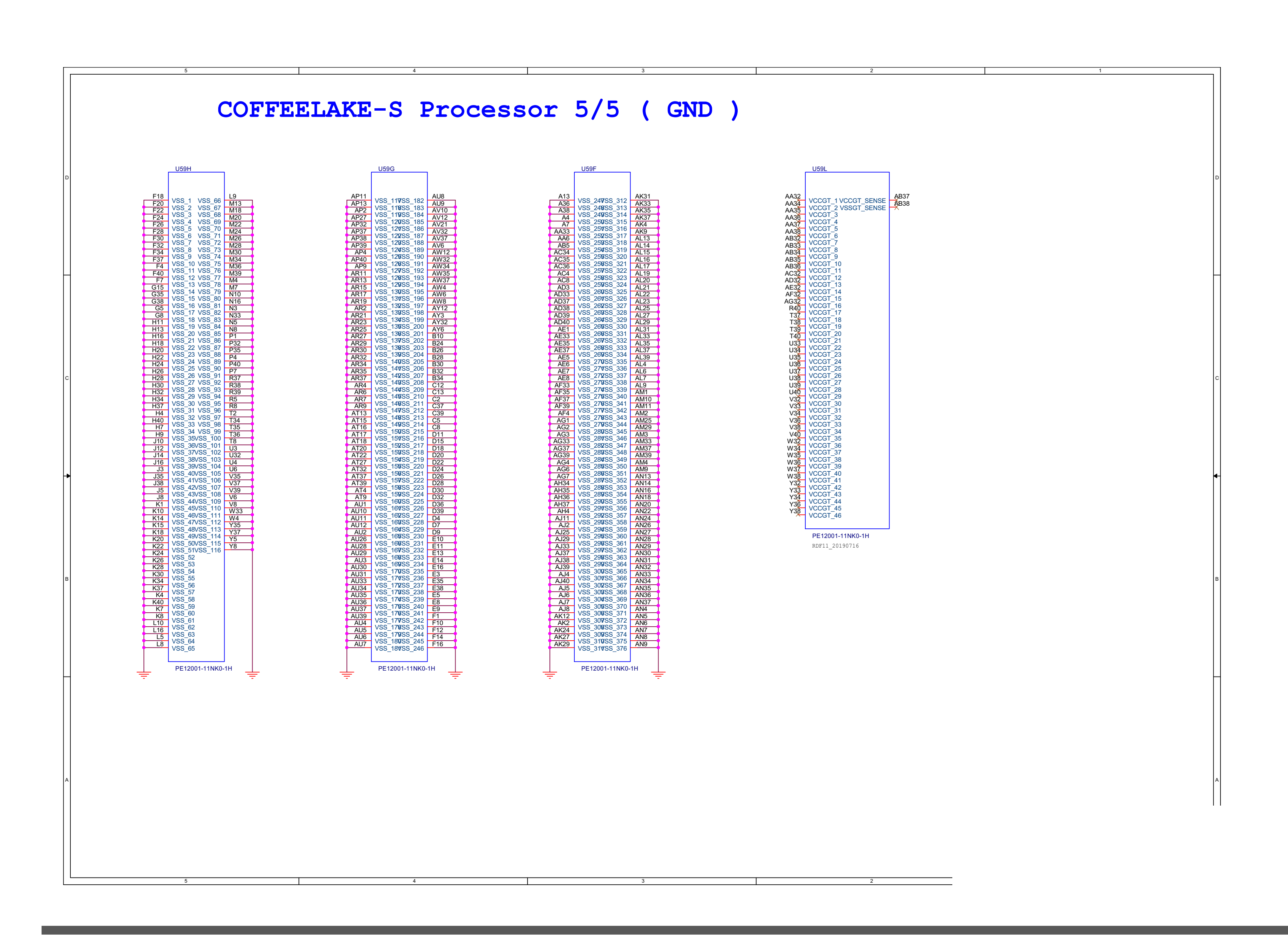
Processor 4/5

Sheet 5 of 71
Processor 4/5



B.Schematic Diagrams

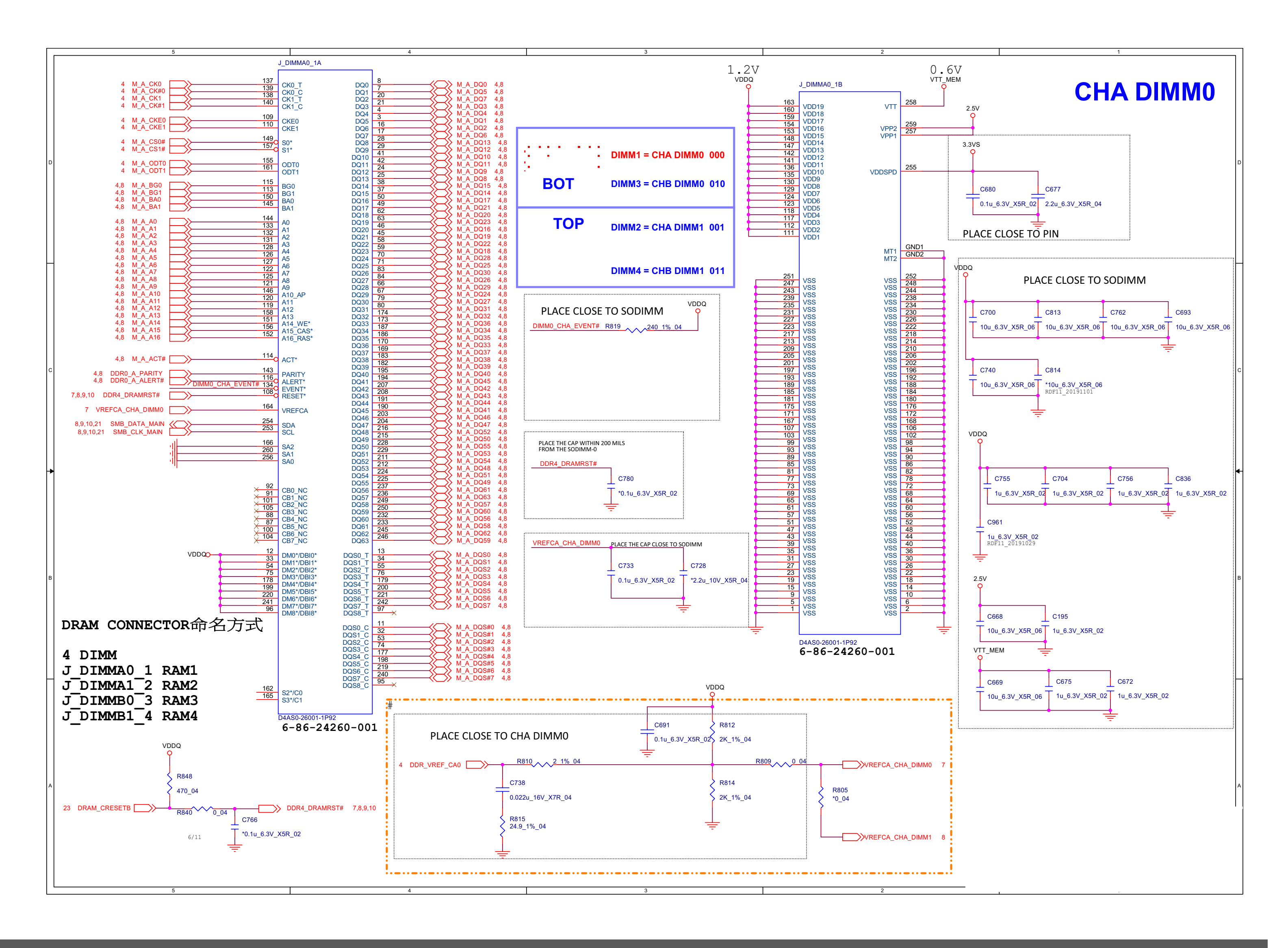
Processor 5/5



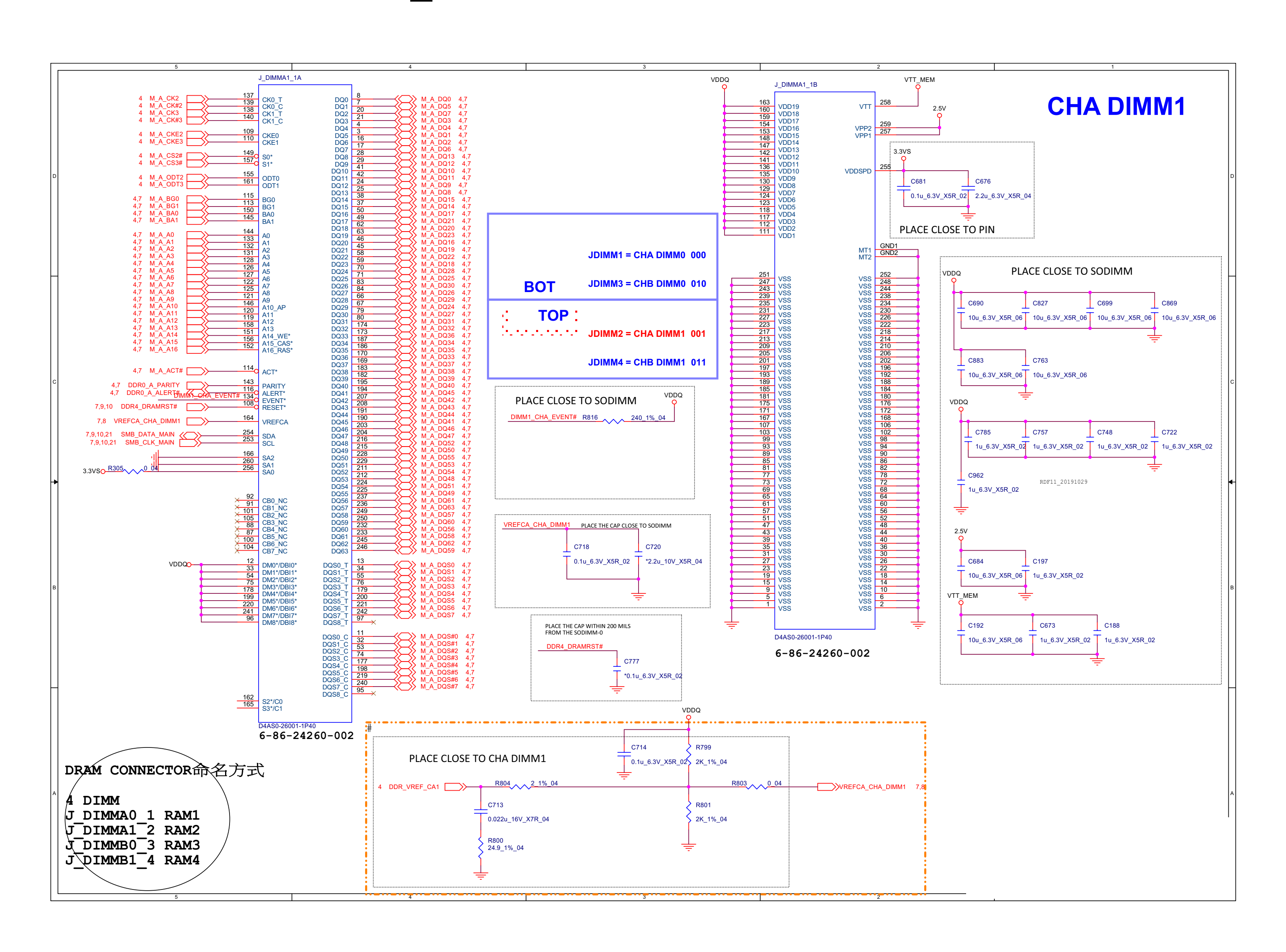
Sheet 6 of 71
Processor 5/5

DDR4 CHA SO-DIMM_0

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DDR4 CHA SO-DIMM_0



DDR4 CHA SO-DIMM_1

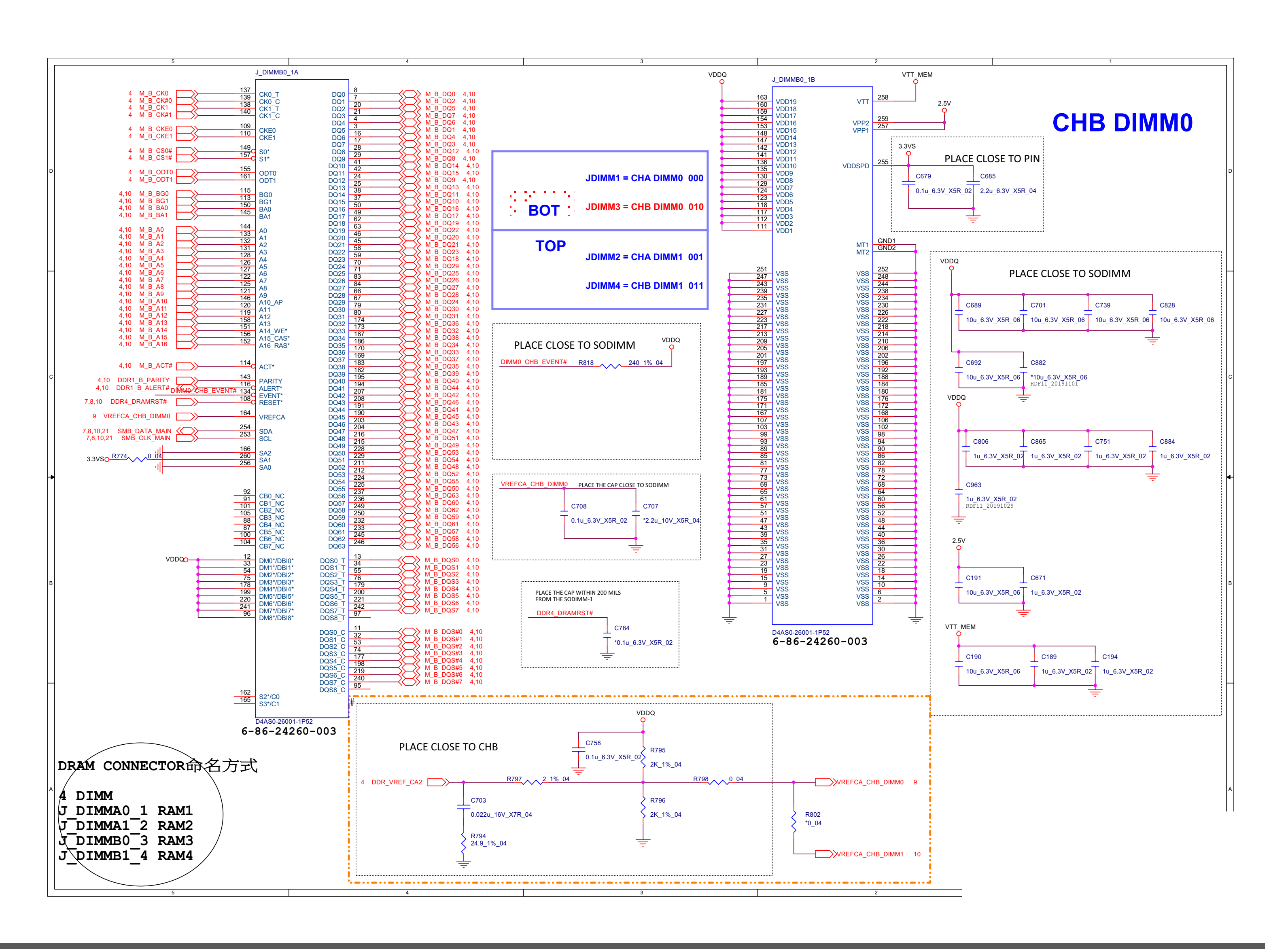


Sheet 8 of 71
DDR4 CHA SO-DIMM_1

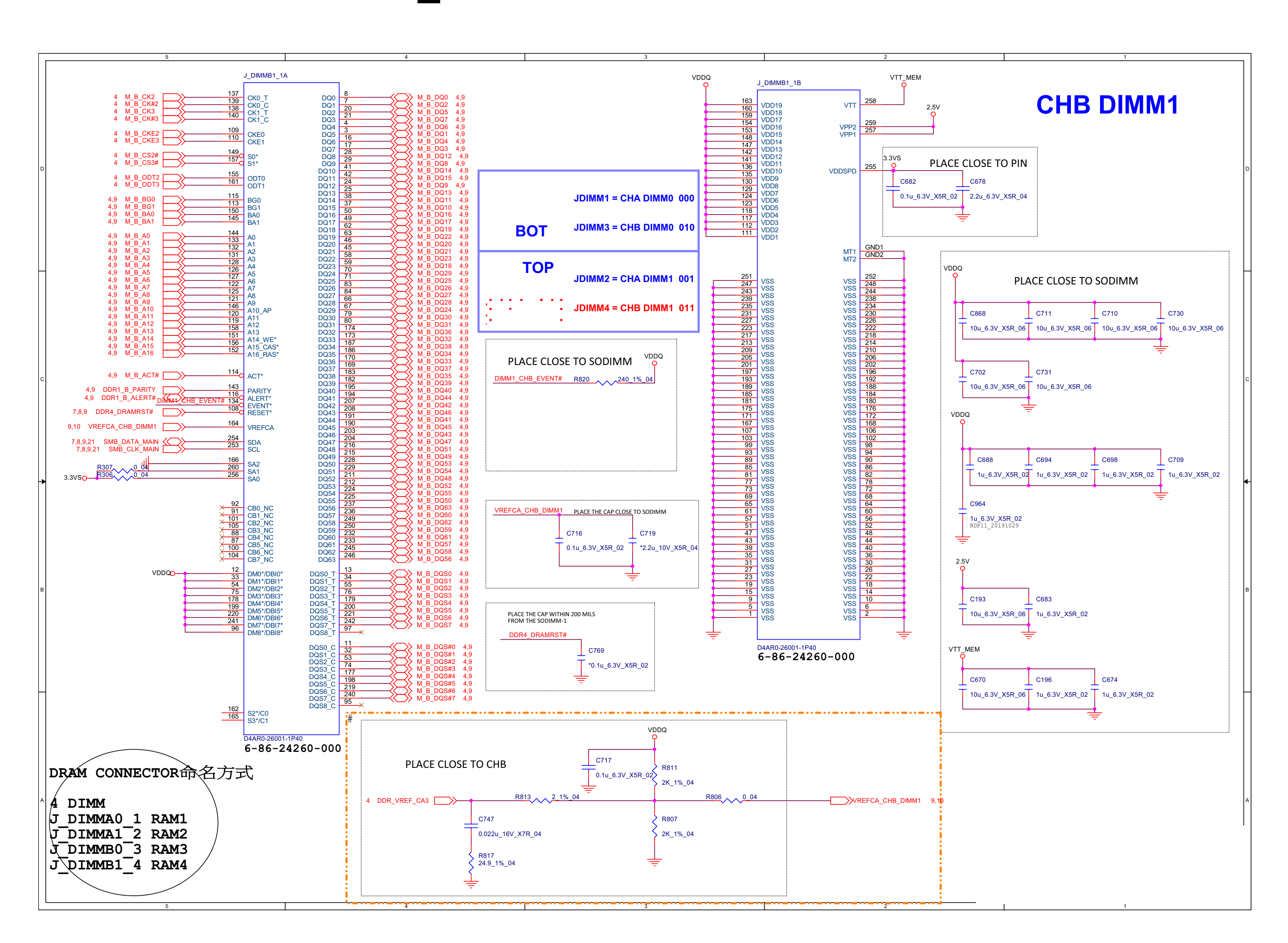
B.Schematic Diagrams

DDR4 CHB SO-DIMM_0

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DDR4 CHB SO-DIMM_0



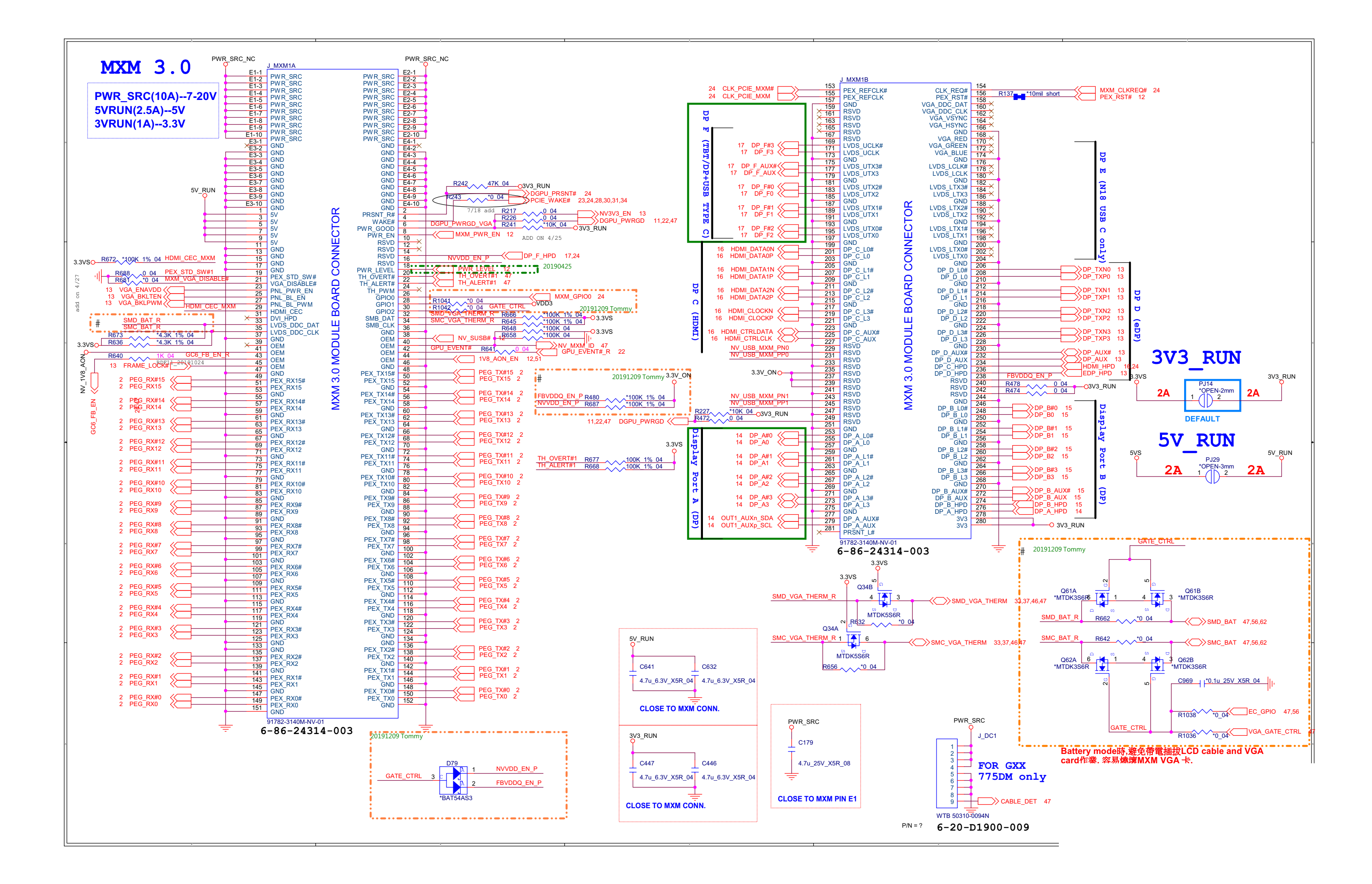
DDR4 CHB SO-DIMM_1



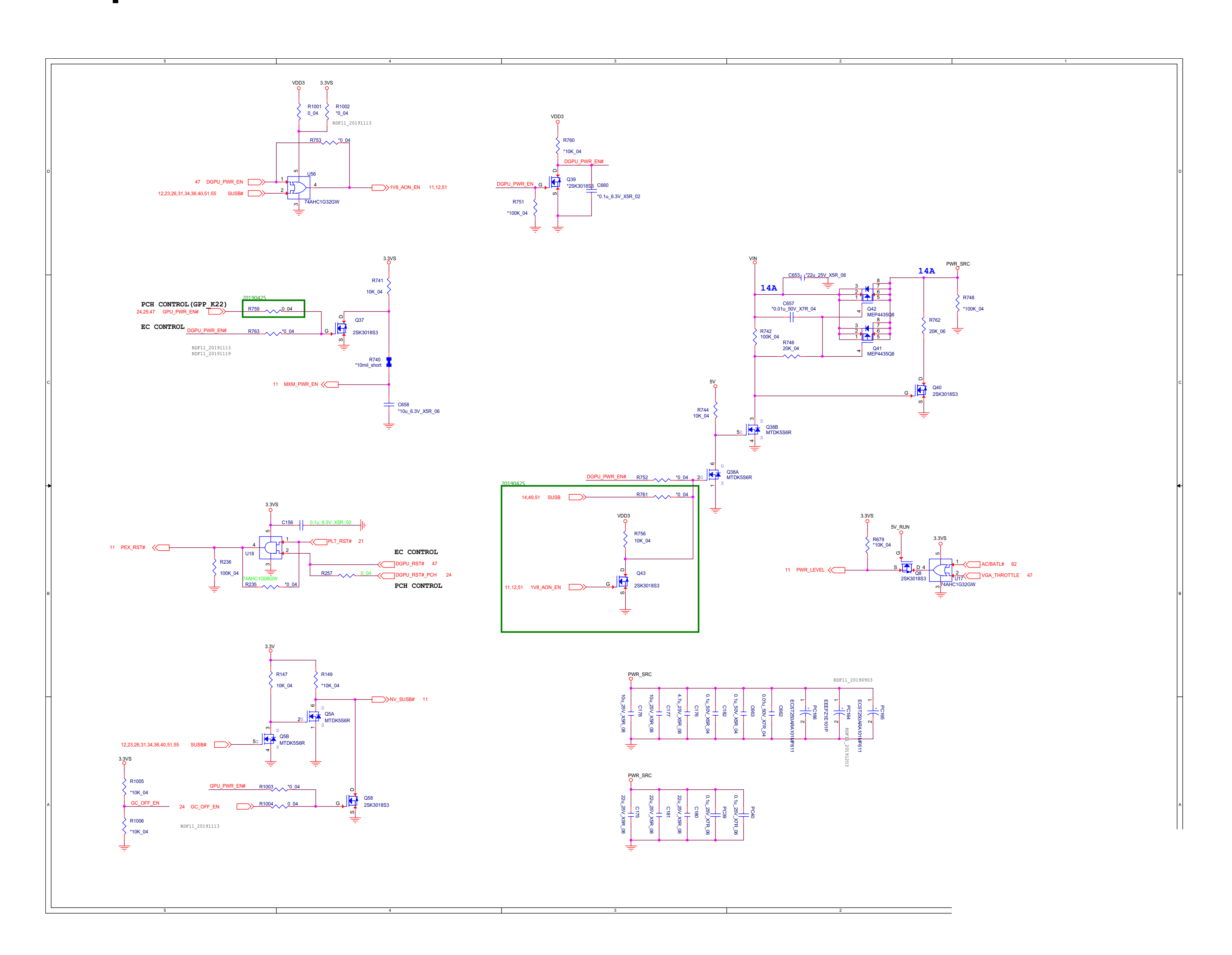
Sheet 10 of 71
DDR4 CHB SO-DIMM_1

MXM PCIE

Sheet 11 of 71
MXM PCIE



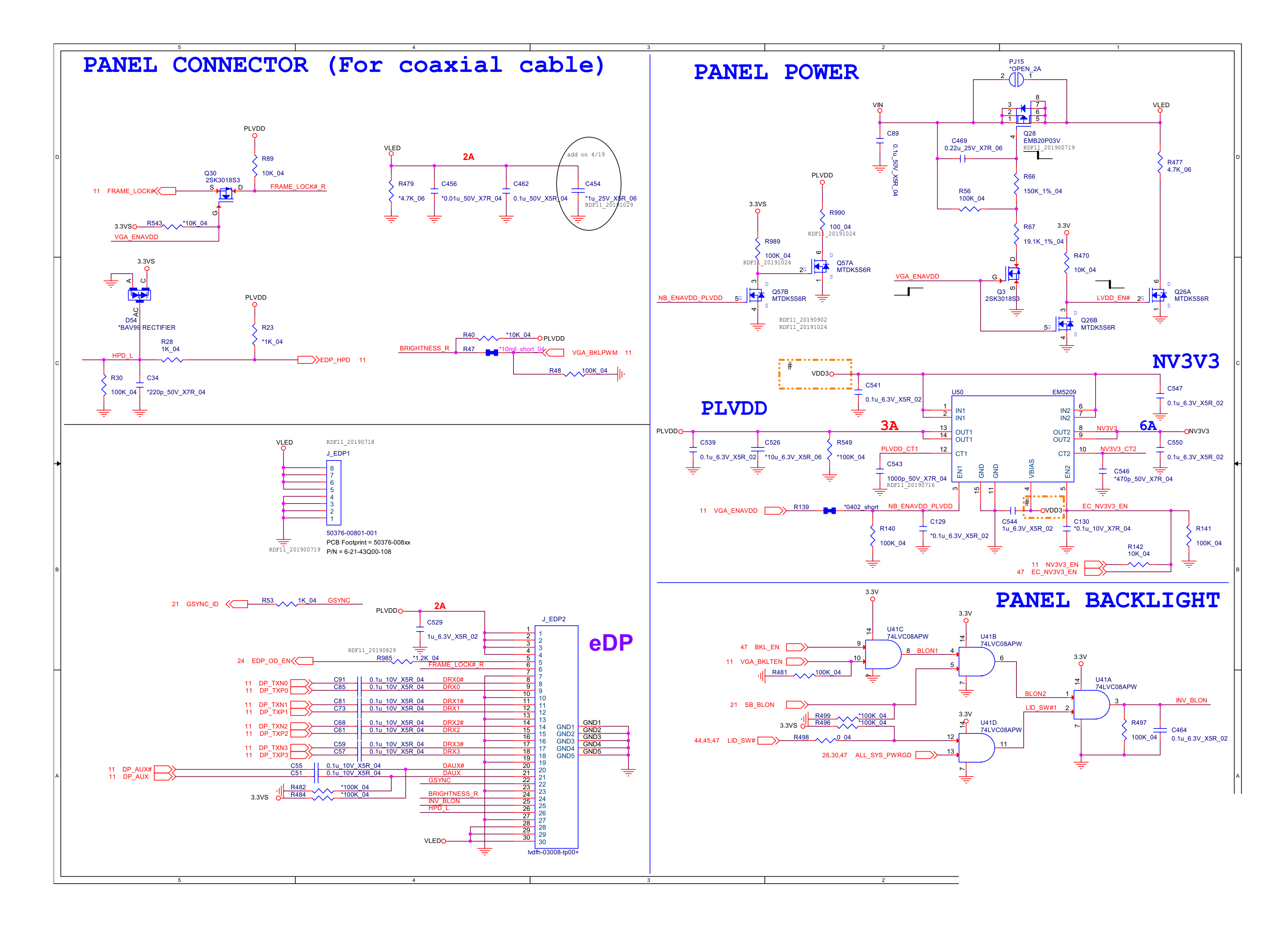
NV Sequence



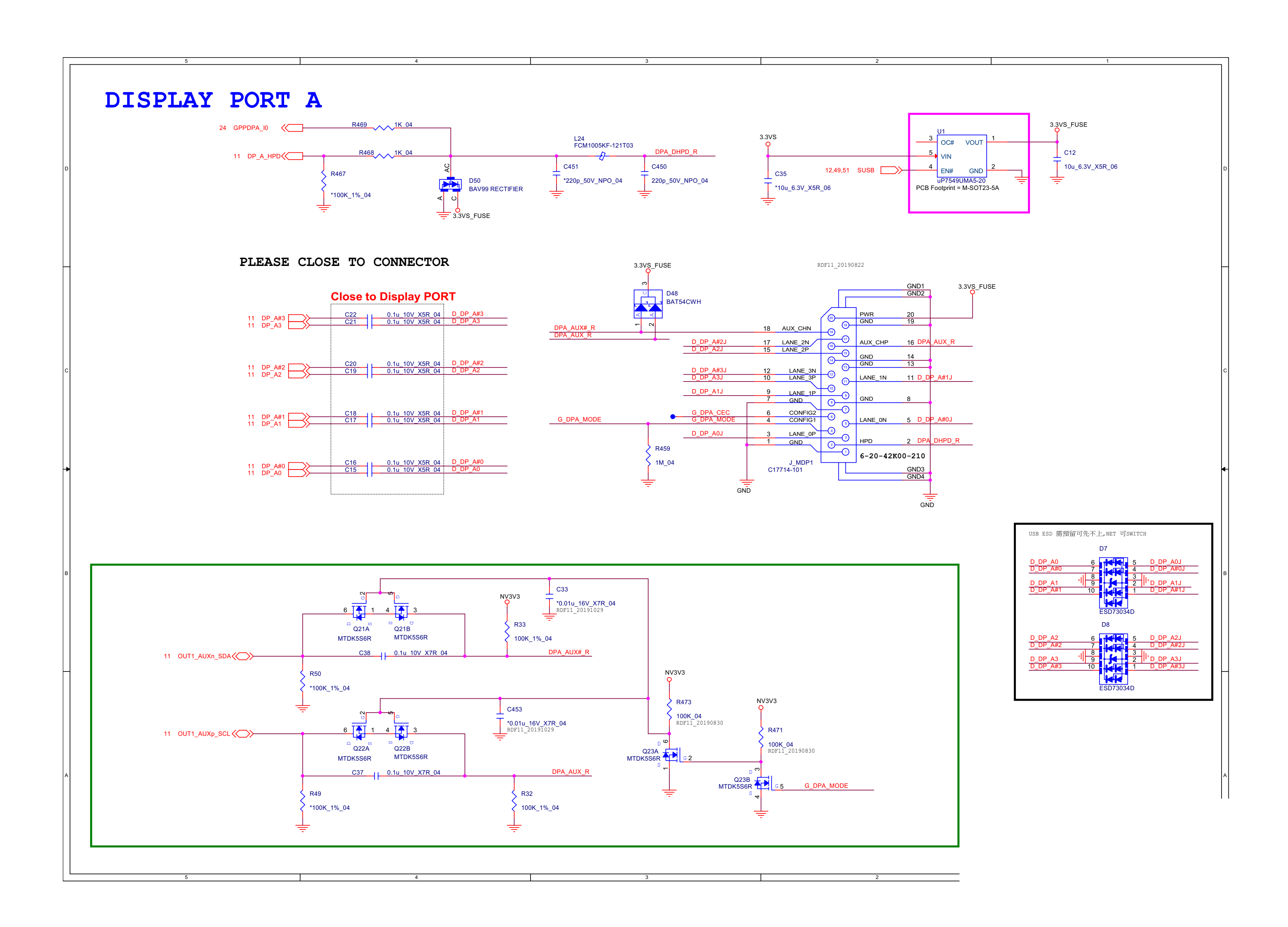
Sheet 12 of 71
NV Sequence

Panel, Inverter

Sheet 13 of 71
Panel, Inverter



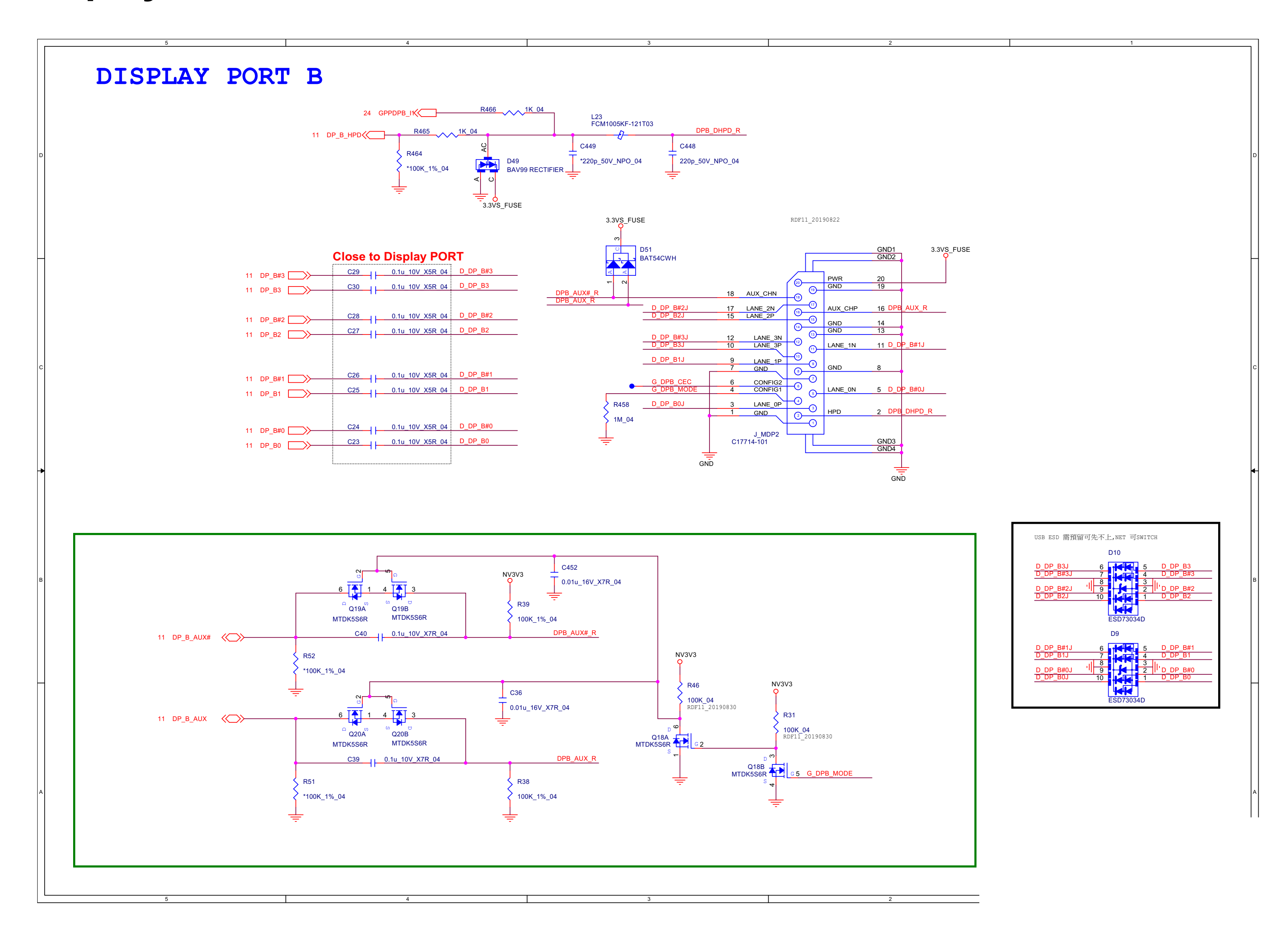
Display Port A



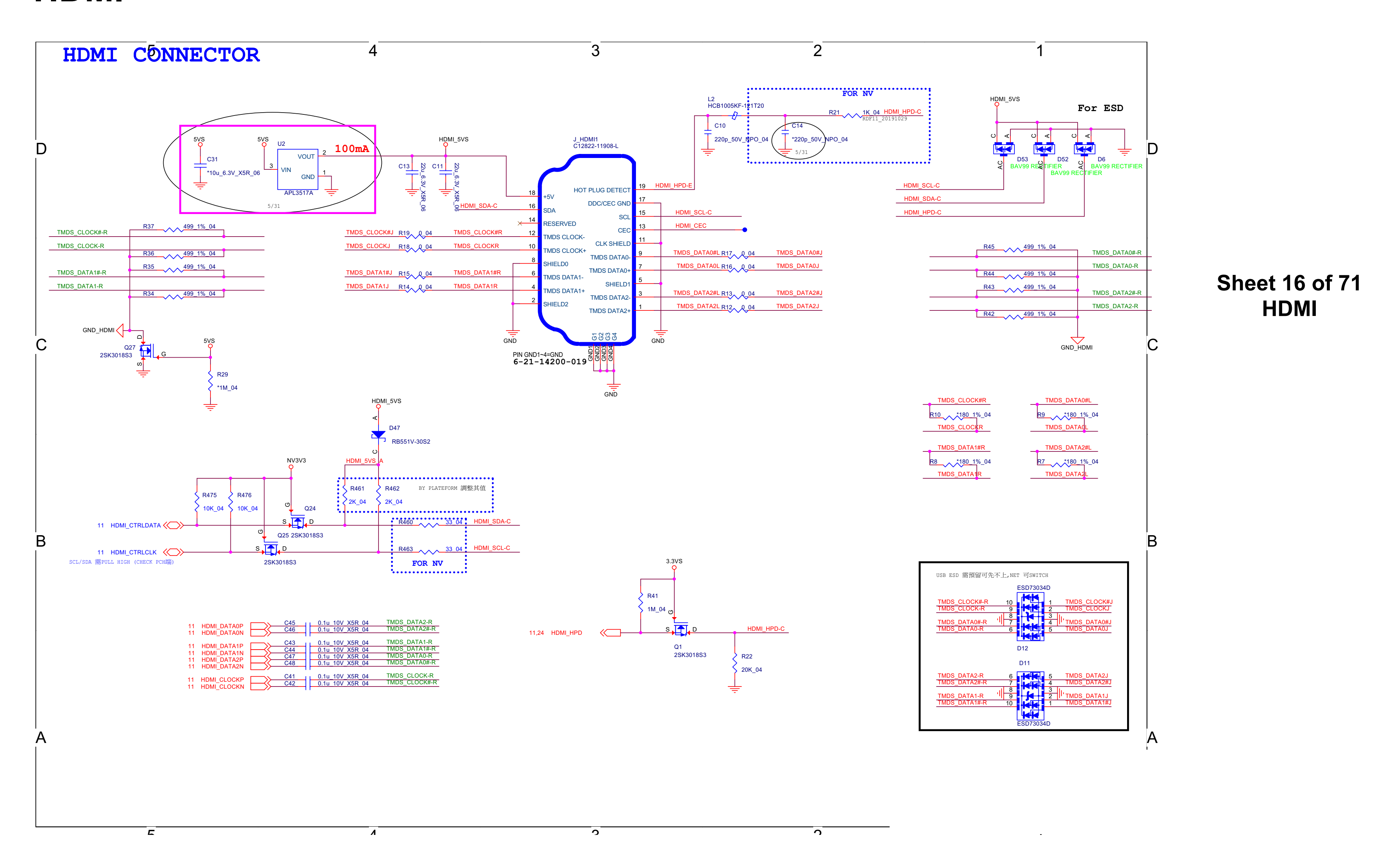
Sheet 14 of 71
Display Port A

Display Port B

Sheet 15 of 71
Display Port B



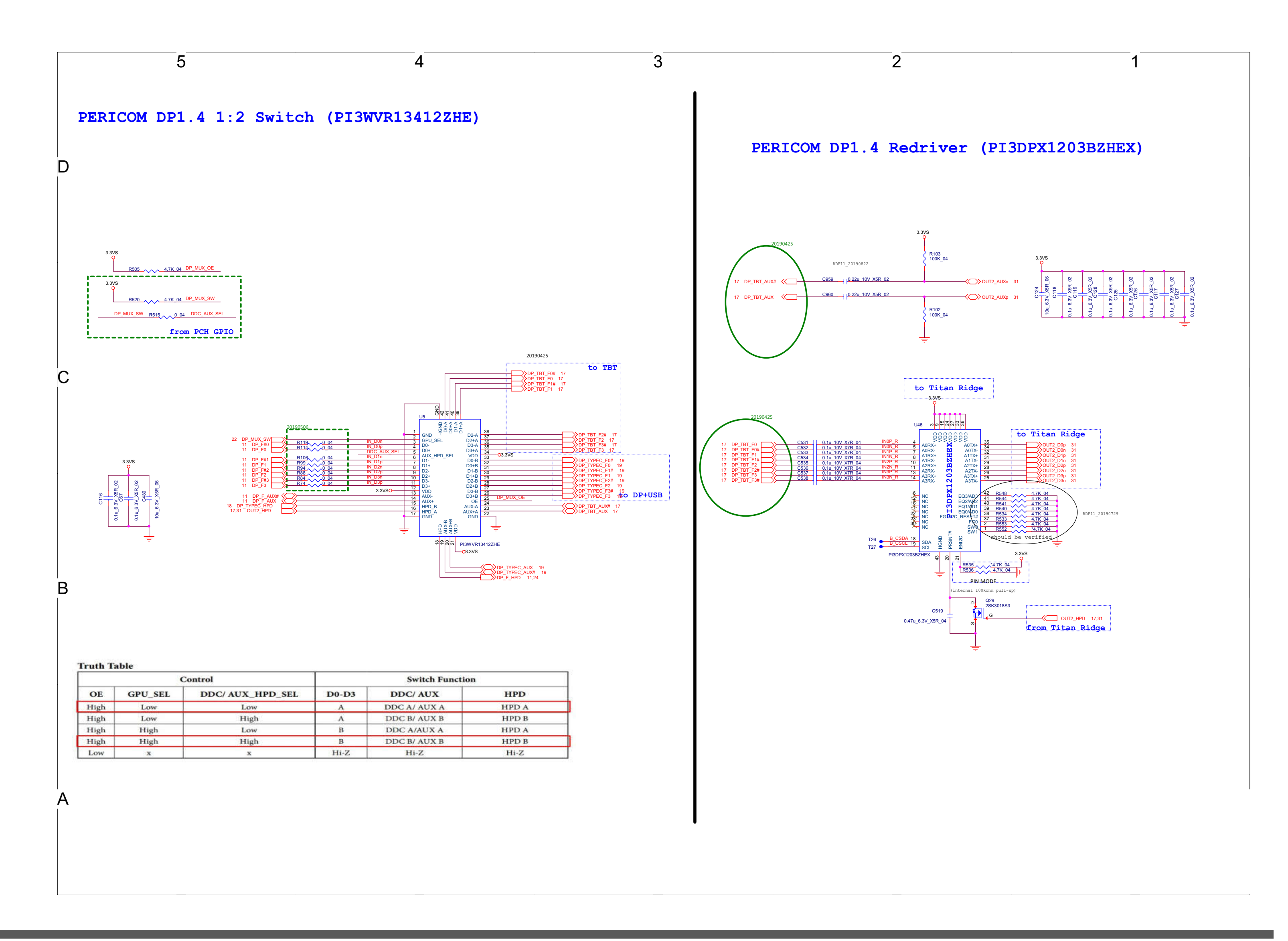
HDMI



Sheet 16 of 71
HDMI

DP MUX+Redriver

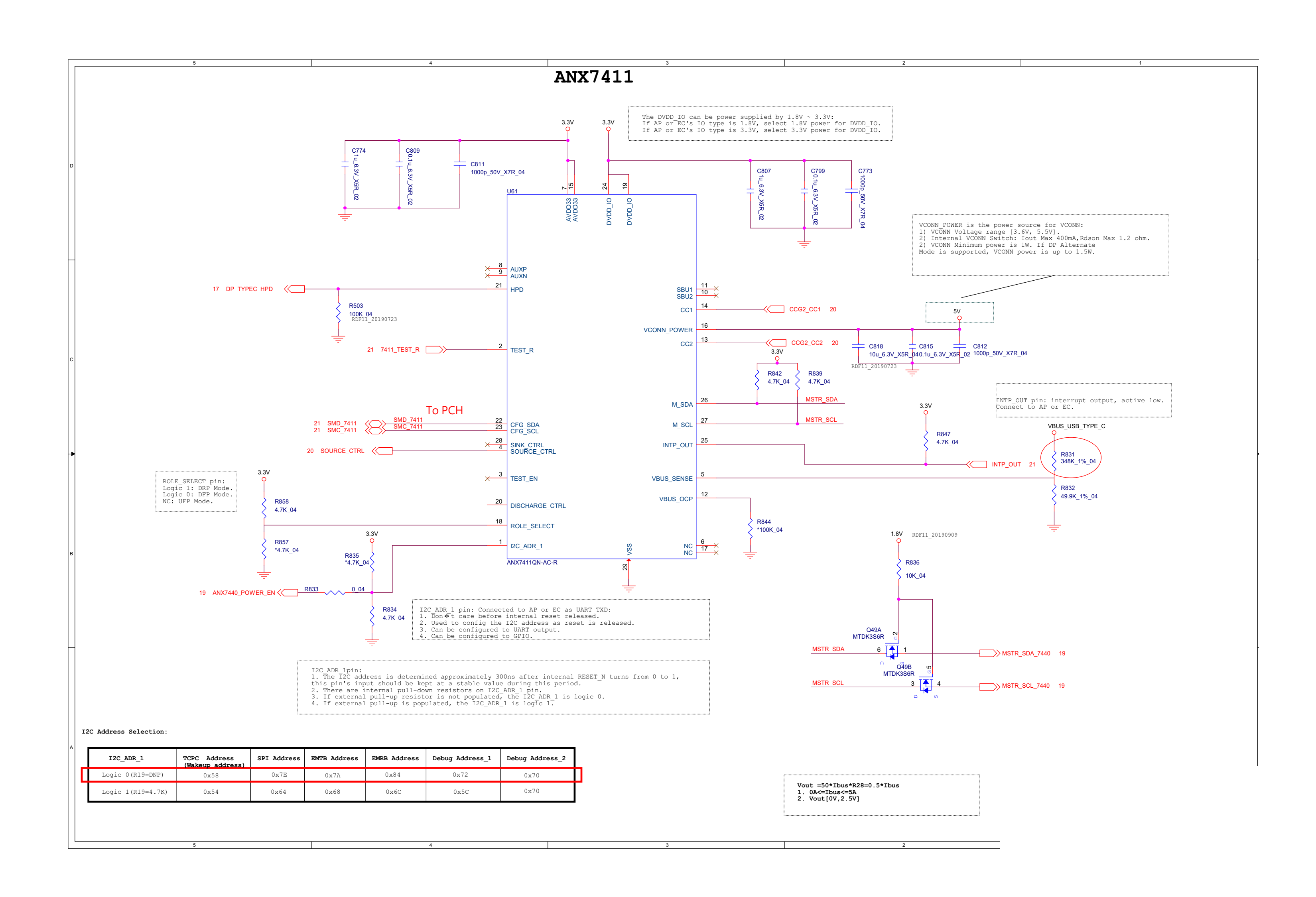
Sheet 17 of 71
DP MUX+Redriver



Truth Table

Control			Switch Function		
OE	GPU_SEL	DDC/ AUX_HPD_SEL	D0-D3	DDC/ AUX	HPD
High	Low	Low	A	DDC A/ AUX A	HPD A
High	Low	High	A	DDC B/ AUX B	HPD B
High	High	Low	B	DDC A/AUX A	HPD A
High	High	High	B	DDC B/ AUX B	HPD B
Low	x	x	Hi-Z	Hi-Z	Hi-Z

PD Controller ANX7411



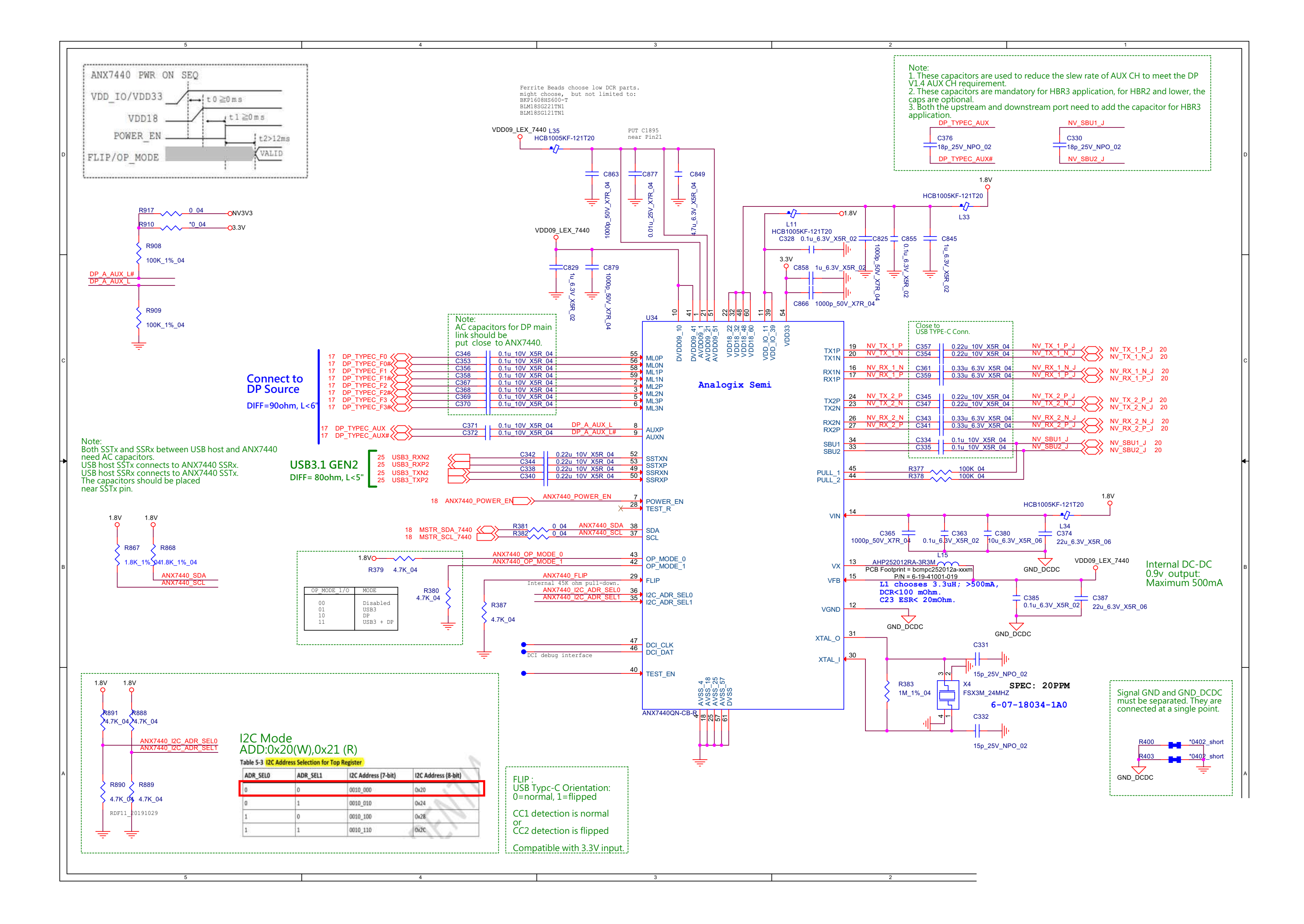
I2C Address Selection:

I2C_ADR_1	TCPC Address (Wakeup address)	SPI Address	EMTB Address	EMRB Address	Debug Address_1	Debug Address_2
Logic 0 (R19=DNP)	0x58	0x7E	0x7A	0x84	0x72	0x70
Logic 1 (R19=4.7K)	0x54	0x64	0x68	0x6C	0x5C	0x70

Sheet 18 of 71
PD Controller
ANX7411

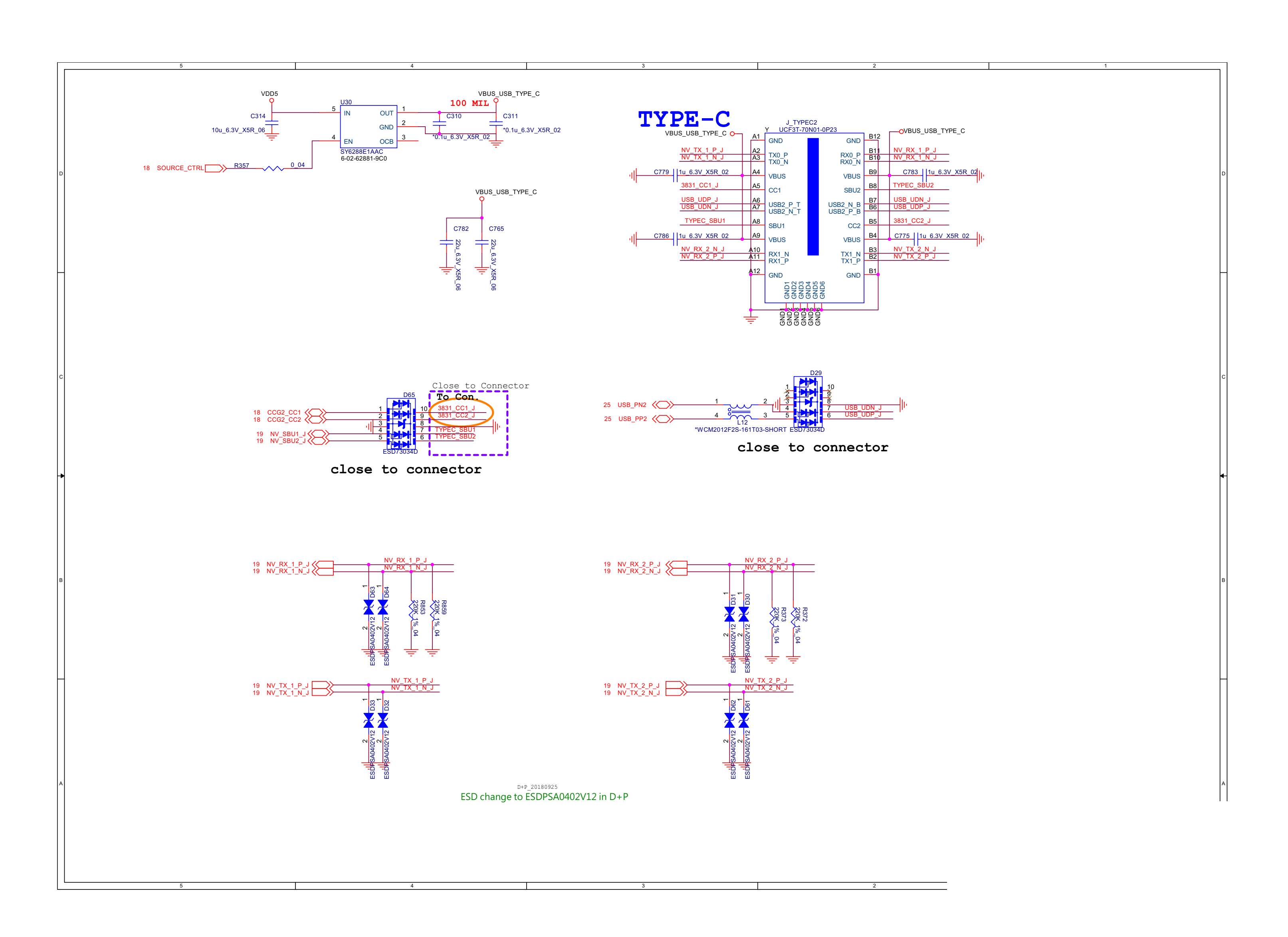
USB Type-C

Sheet 19 of 71
USB Type-C



ADR_SEL0	ADR_SEL1	I2C Address (7-bit)	I2C Address (8-bit)
0	0	0010_000	0x20
0	1	0010_010	0x24
1	0	0010_100	0x28
1	1	0010_110	0x2C

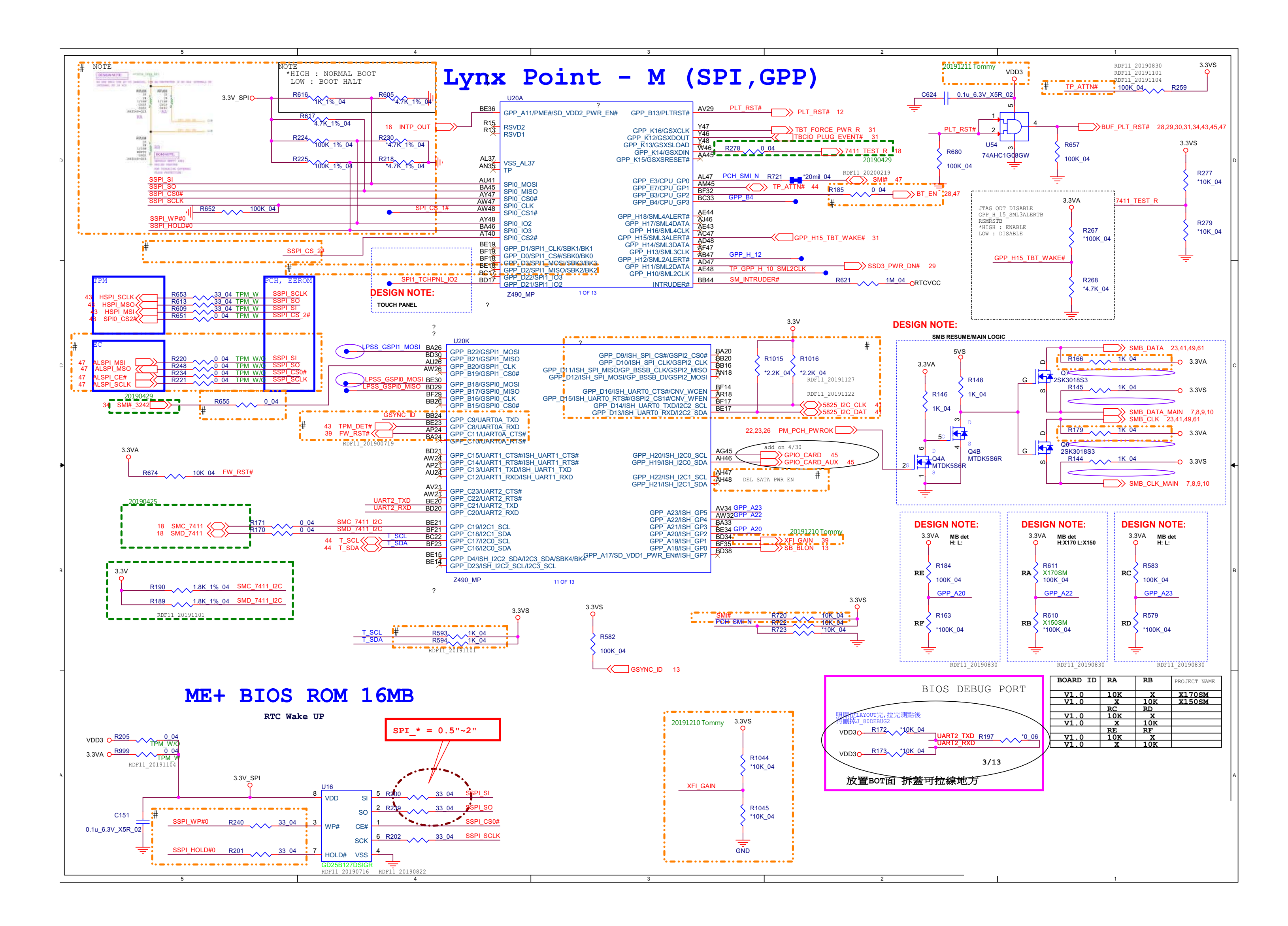
DP+USB Type-C



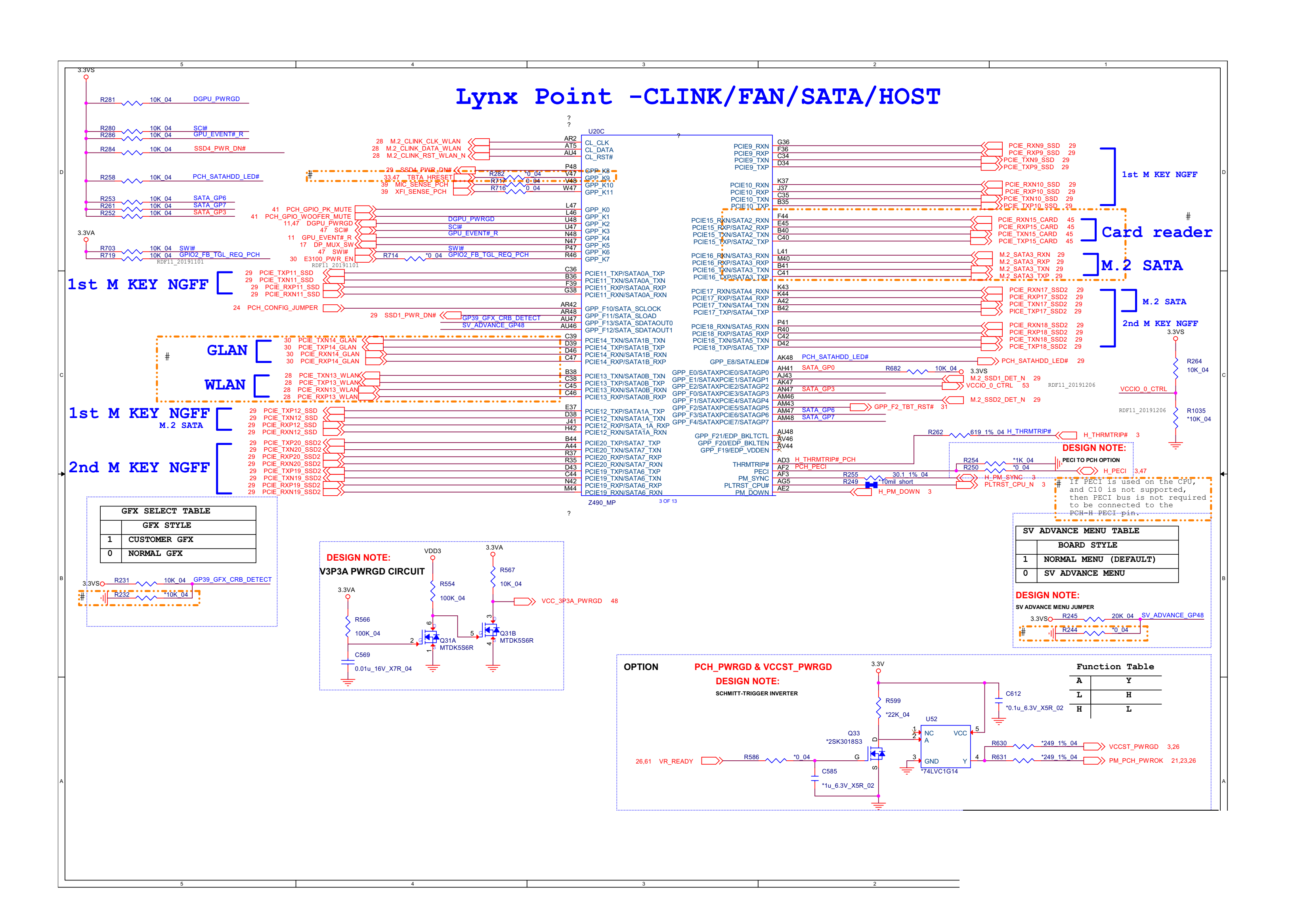
Sheet 20 of 71
DP+USB Type-C

PCH 1/7

Sheet 21 of 71
PCH 1/7



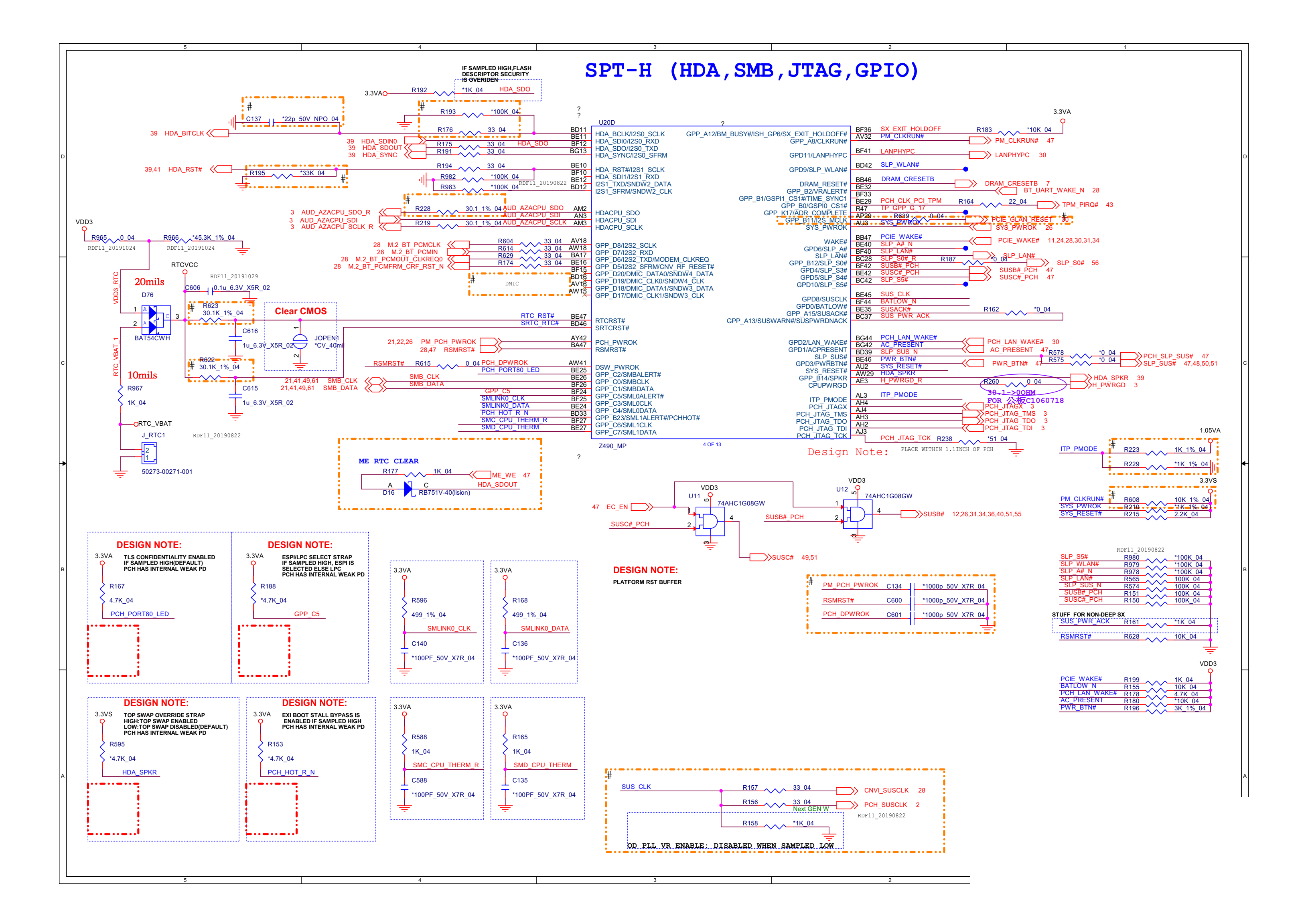
PCH 2/7



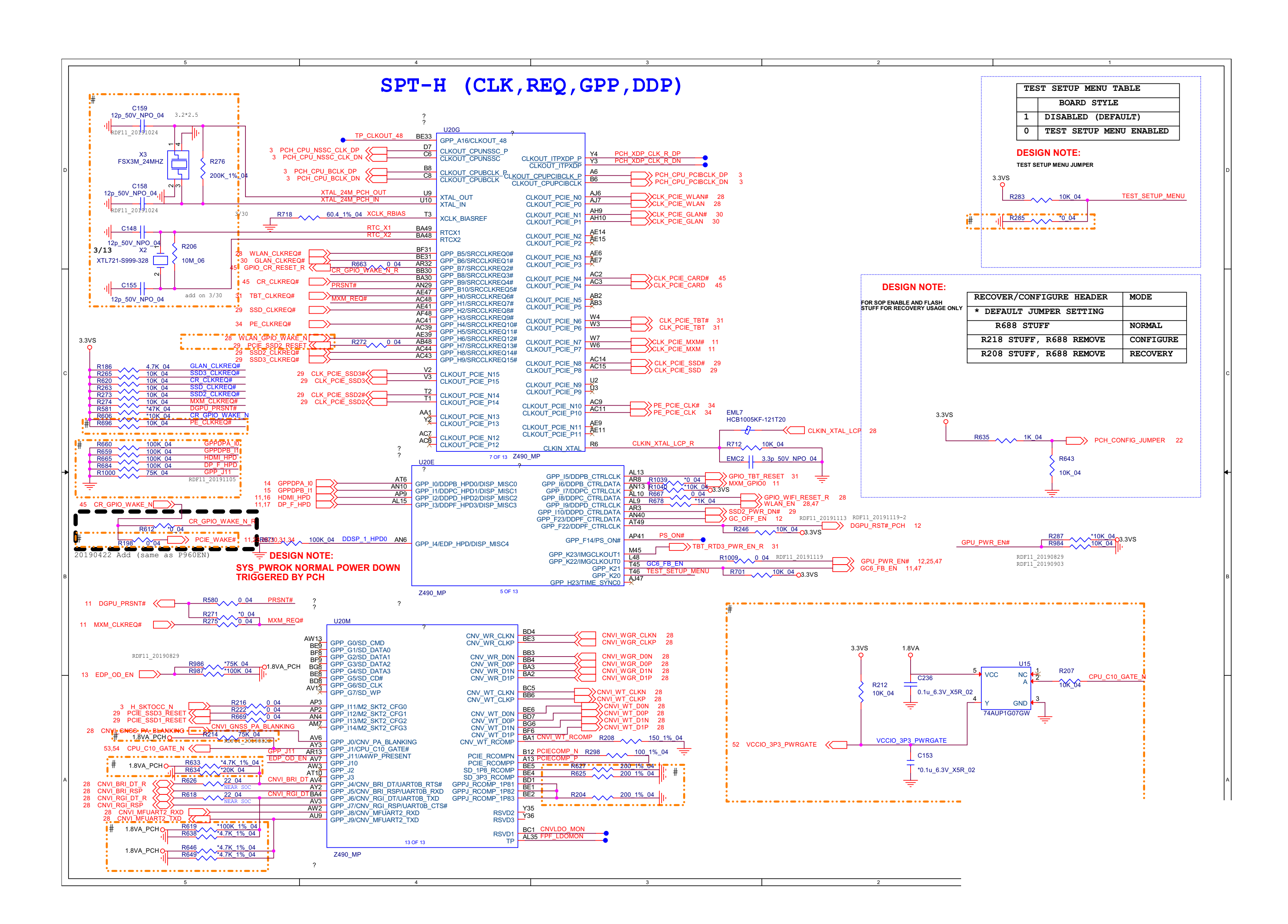
Sheet 22 of 71
PCH 2/7

PCH 3/7

Sheet 23 of 71
PCH 3/7



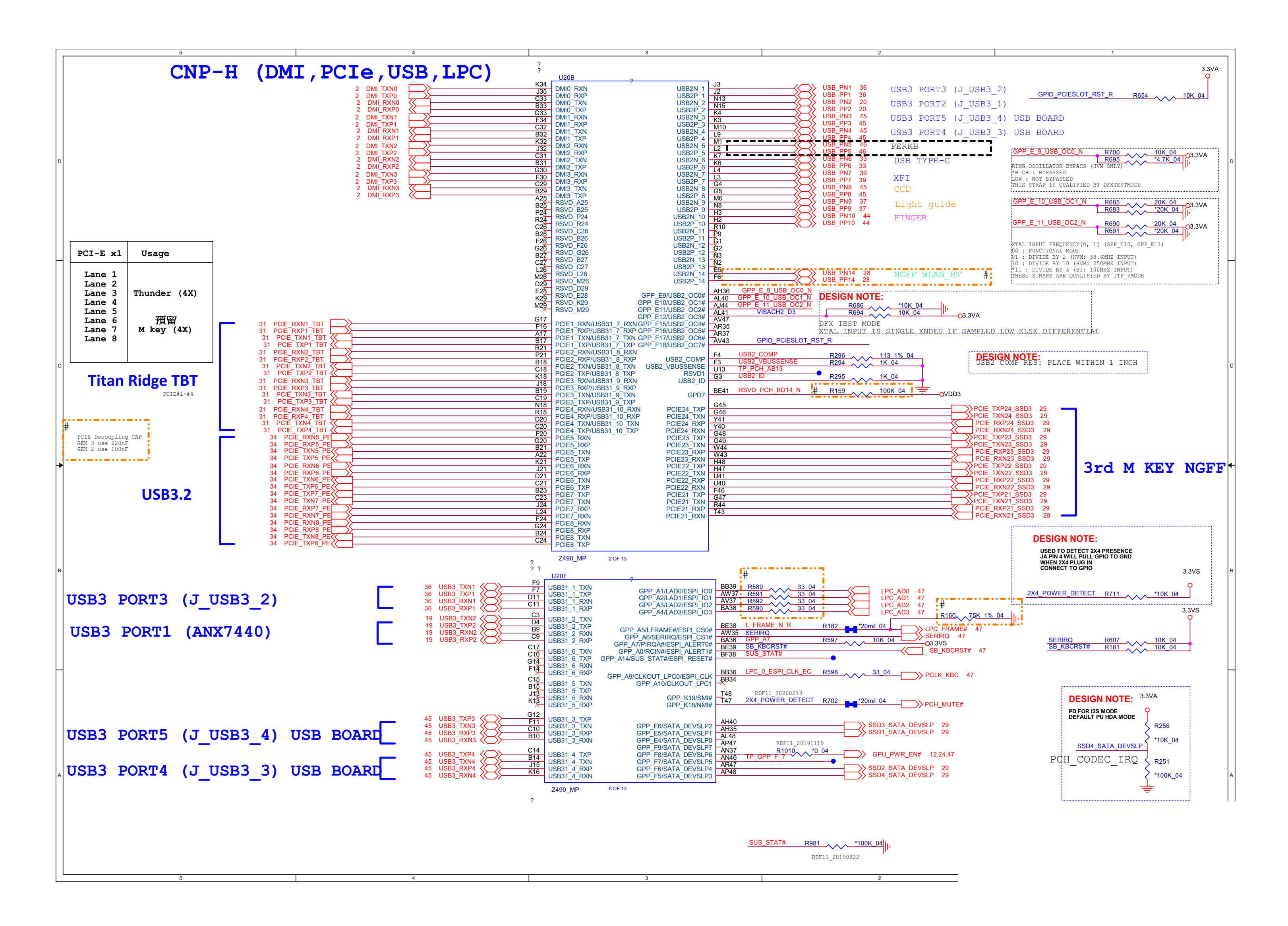
PCH 4/7



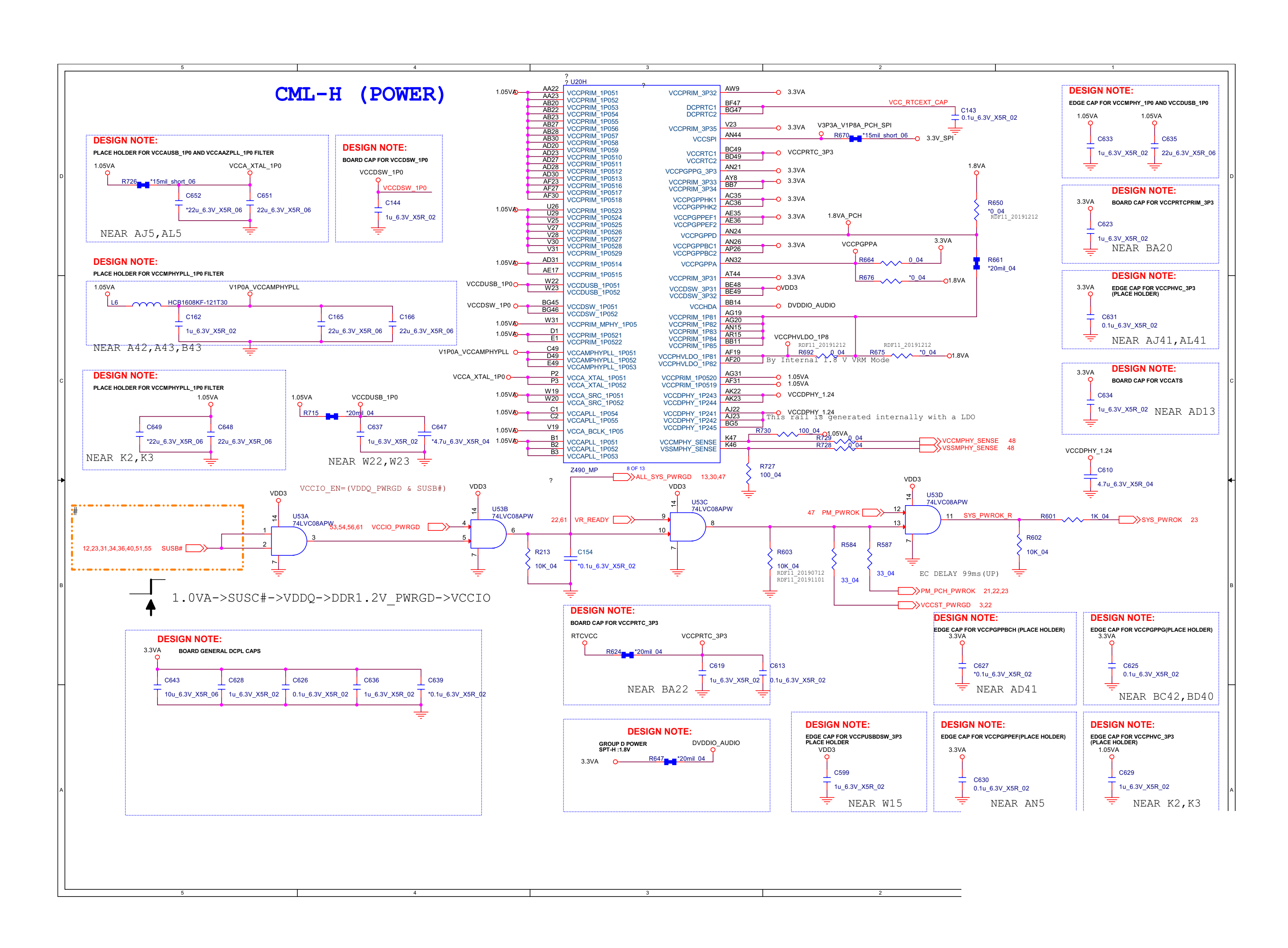
Sheet 24 of 71
PCH 4/7

PCH 5/7

Sheet 25 of 71
PCH 5/7



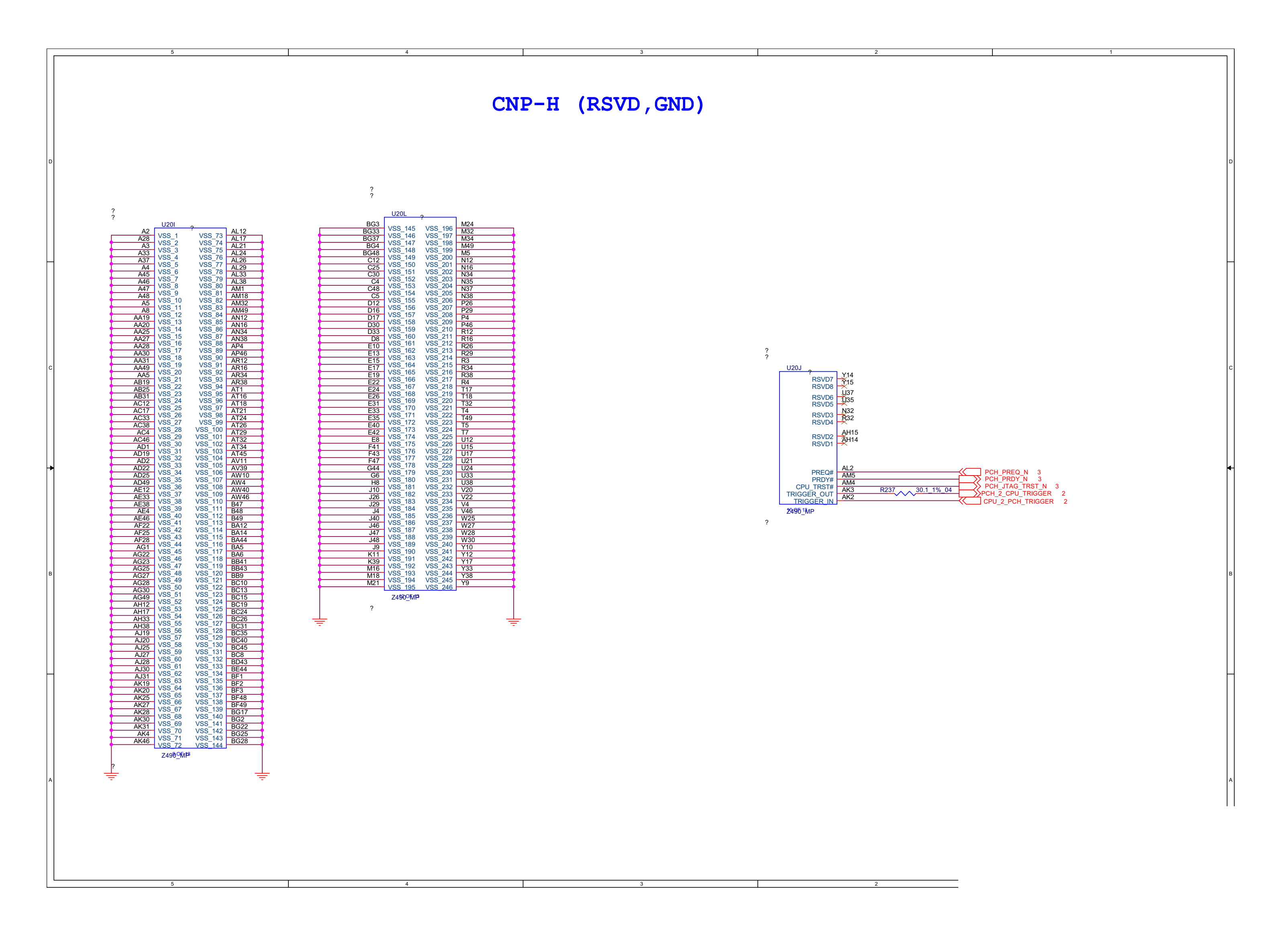
PCH 6/7



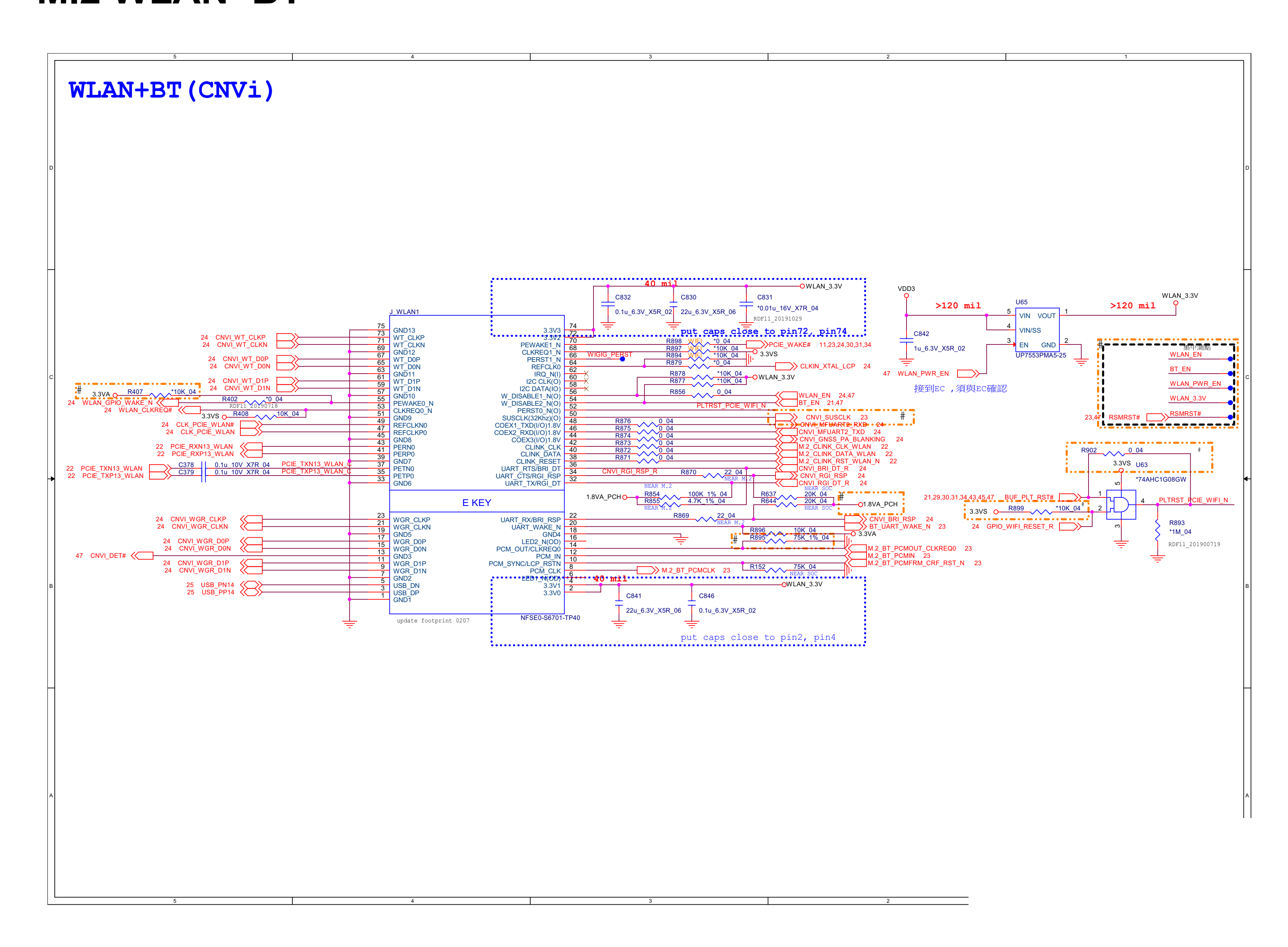
Sheet 26 of 71
PCH 6/7

PCH 7/7

Sheet 27 of 71
PCH 7/7



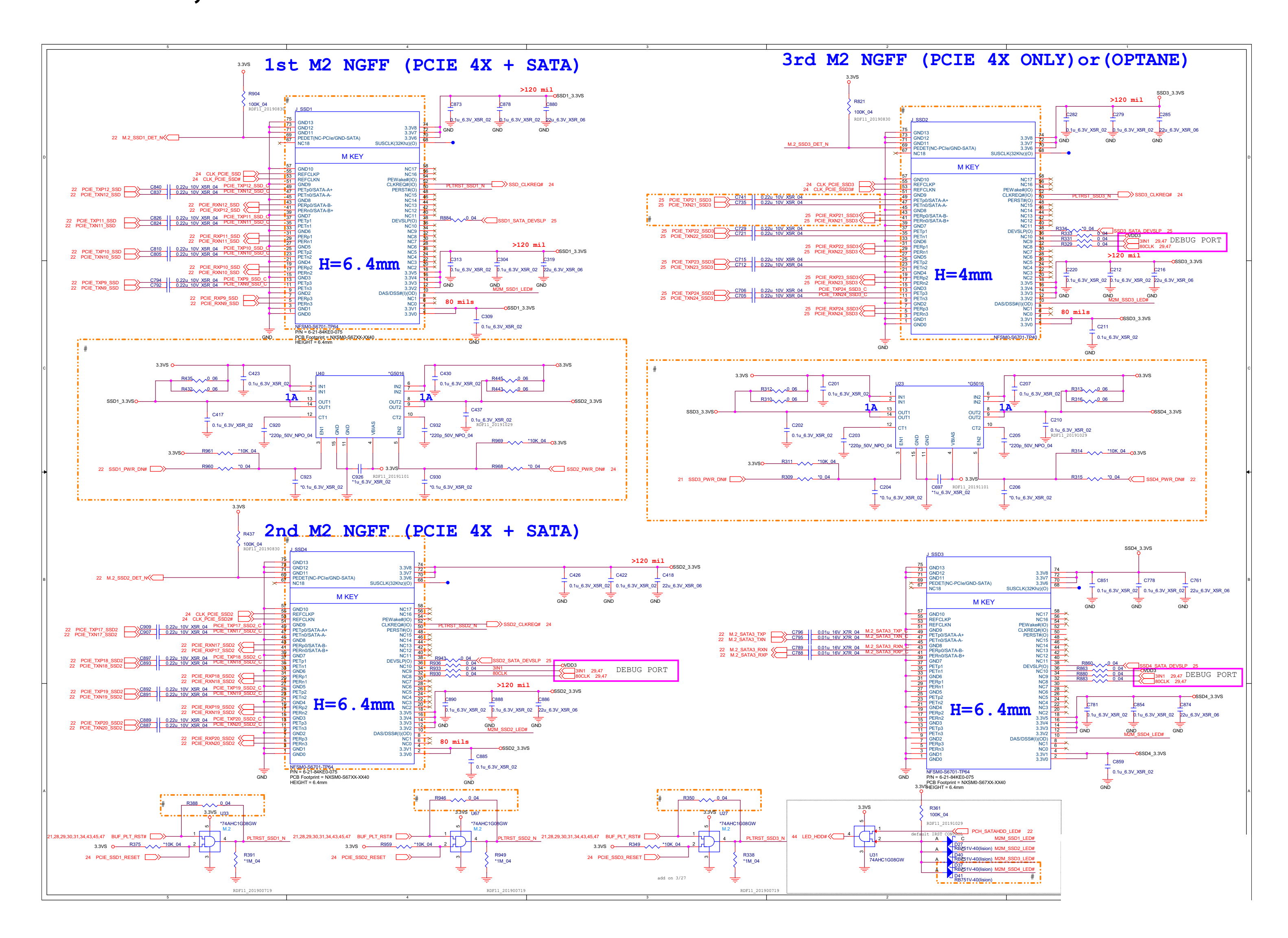
M.2 WLAN+BT



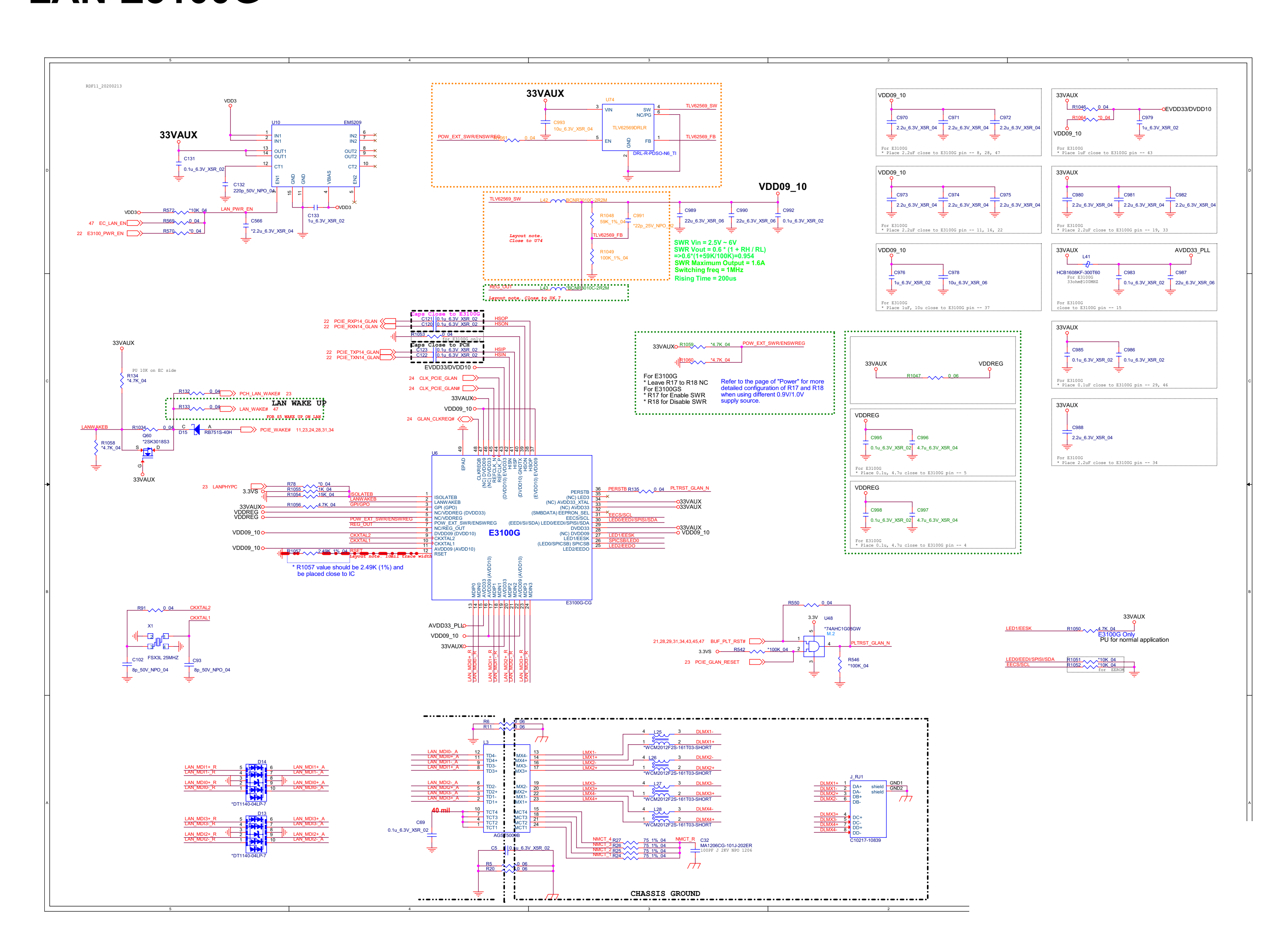
Sheet 28 of 71
M.2 WLAN+BT

M.2 PCIE, SATA

Sheet 29 of 71
M.2 PCIE, SATA



LAN E3100G

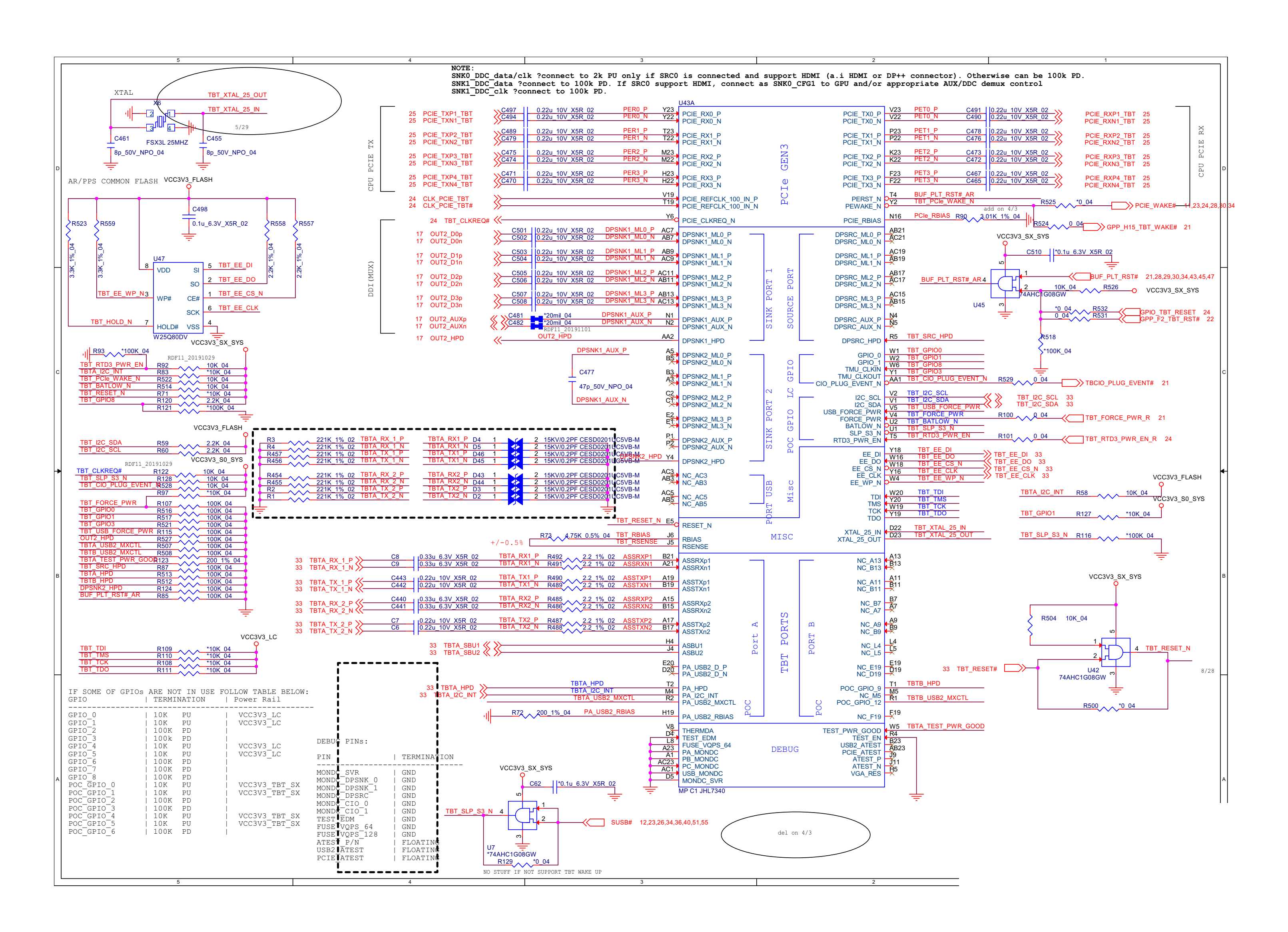


Sheet 30 of 71
LAN E3100G

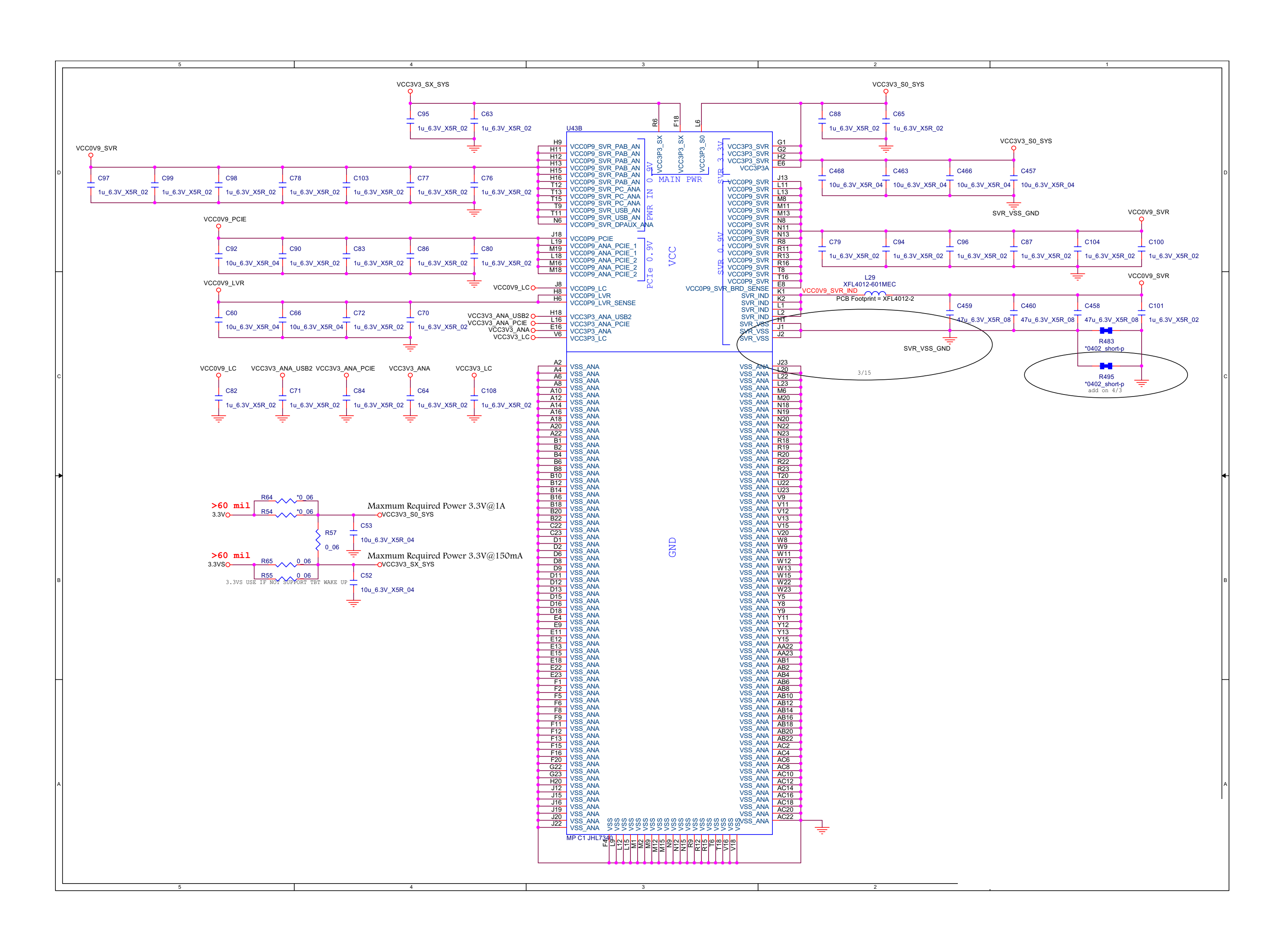
B.Schematic Diagrams

TR_TBT

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TR_TBT



TR_TBT Power

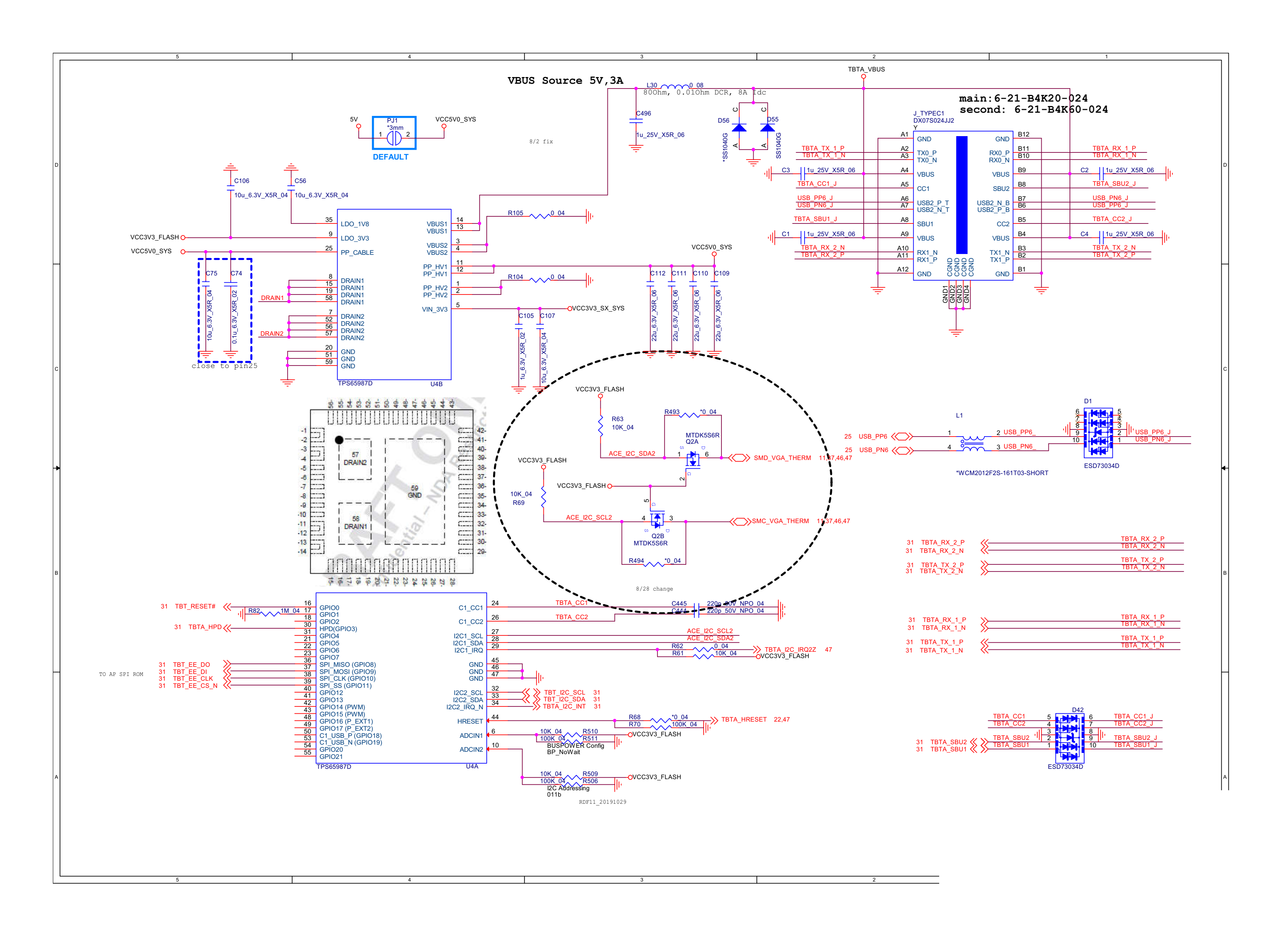


Sheet 32 of 71
TR_TBT Power

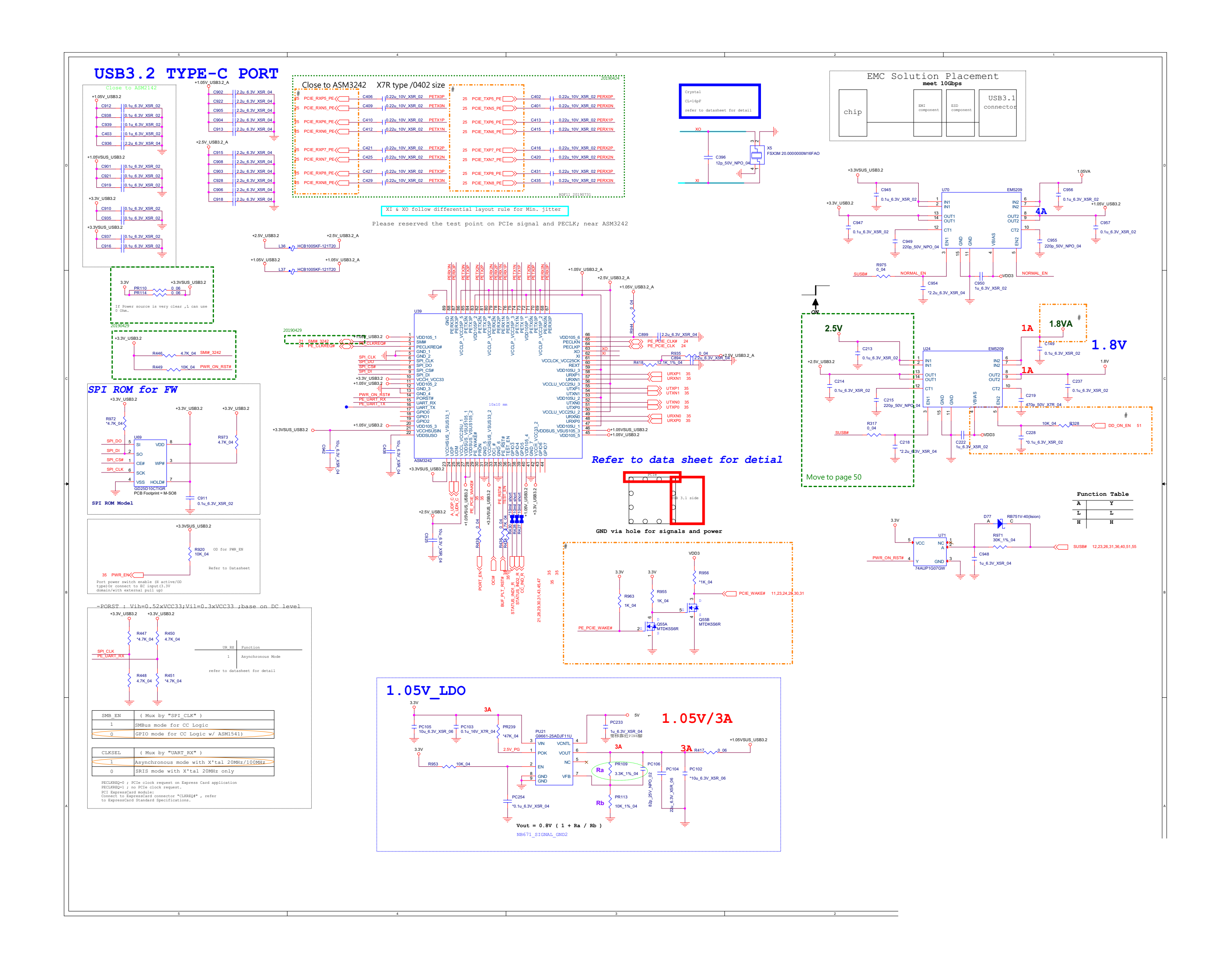
B.Schematic Diagrams

TPS65987

Sheet 33 of 71
TPS65987



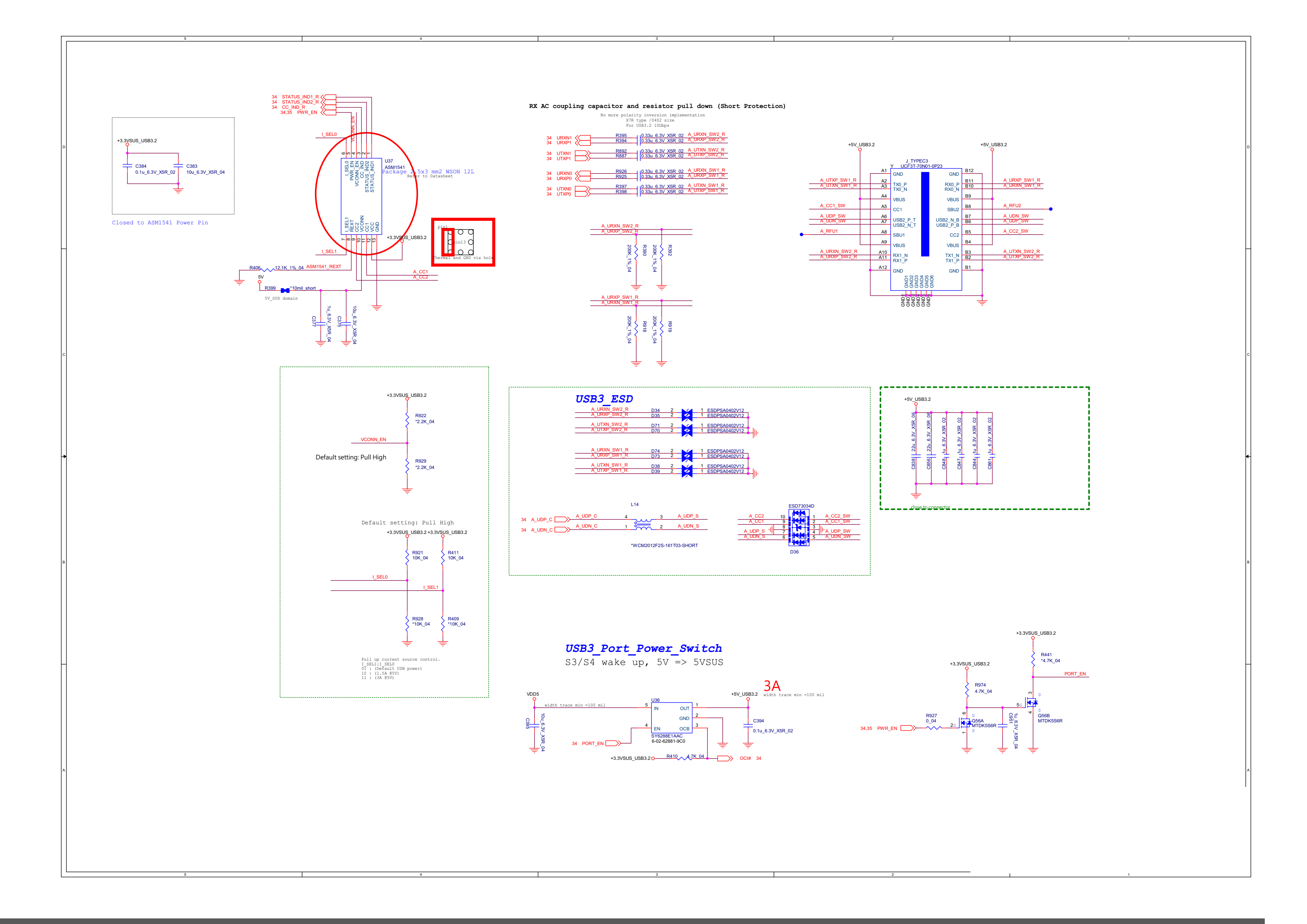
ASM3242



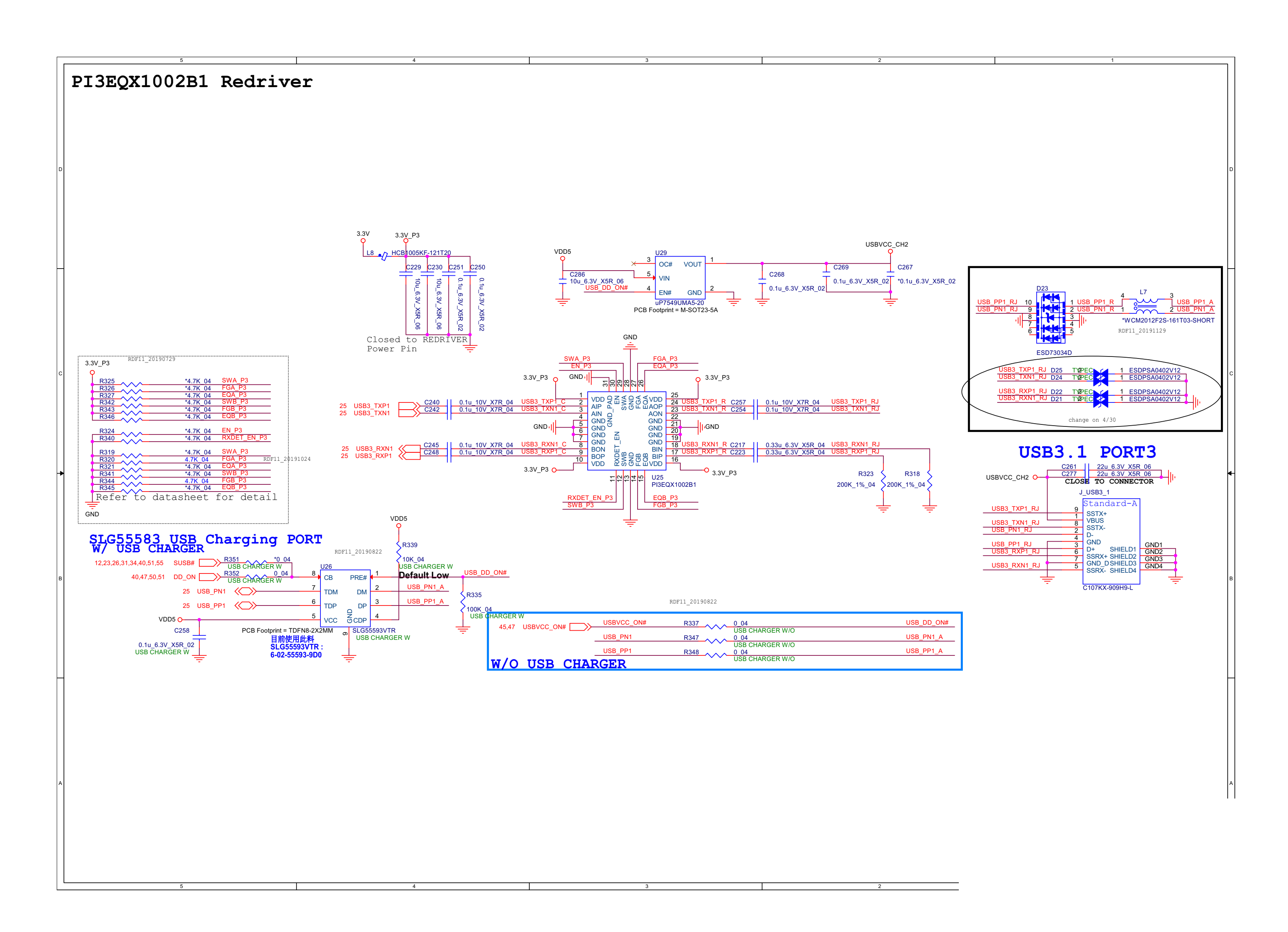
Sheet 34 of 71
ASM3242

ASM1541

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ASM1541



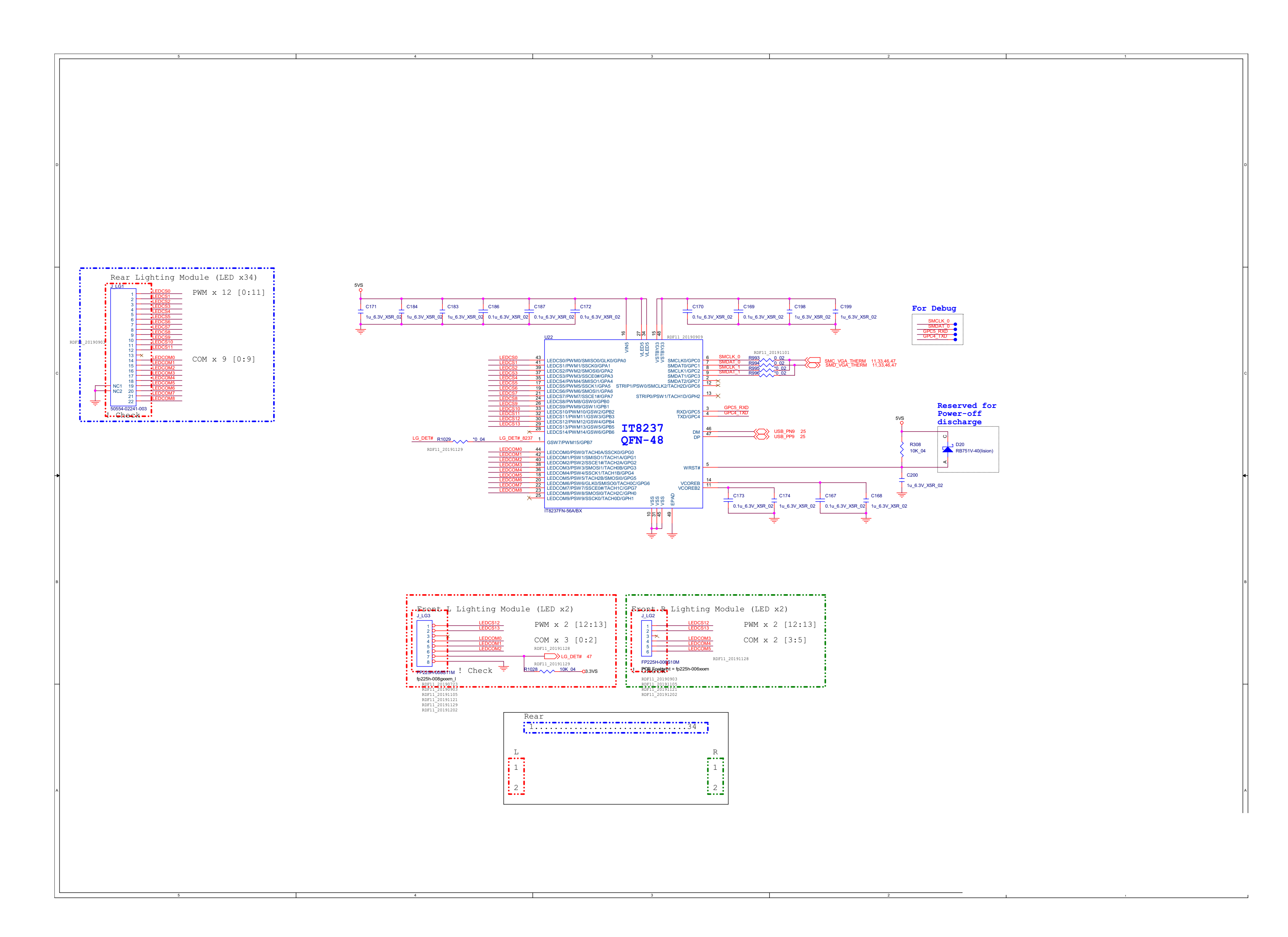
USB Type-A



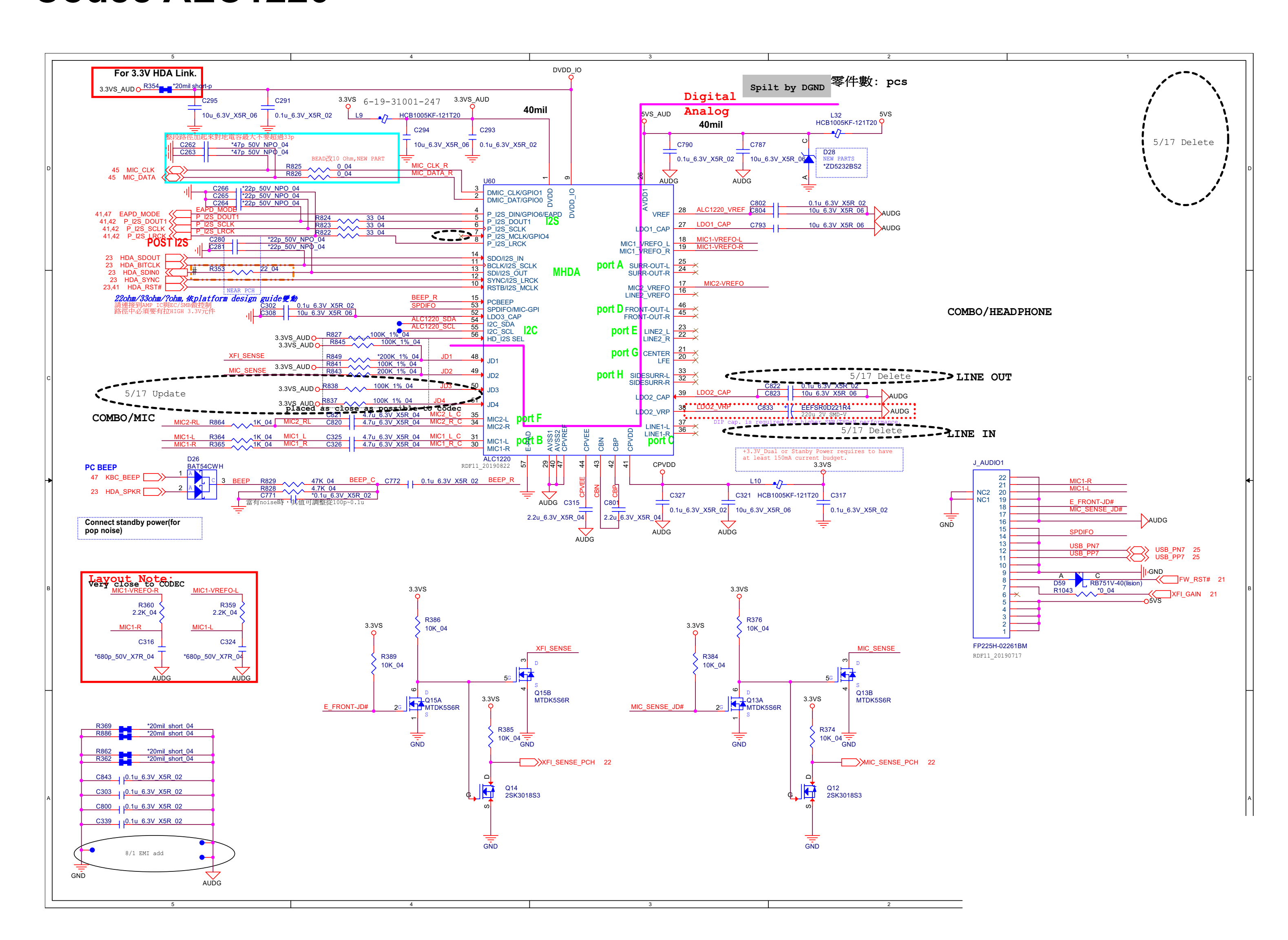
Sheet 36 of 71
USB Type-A

Light Guide

Sheet 37 of 71
Light Guide



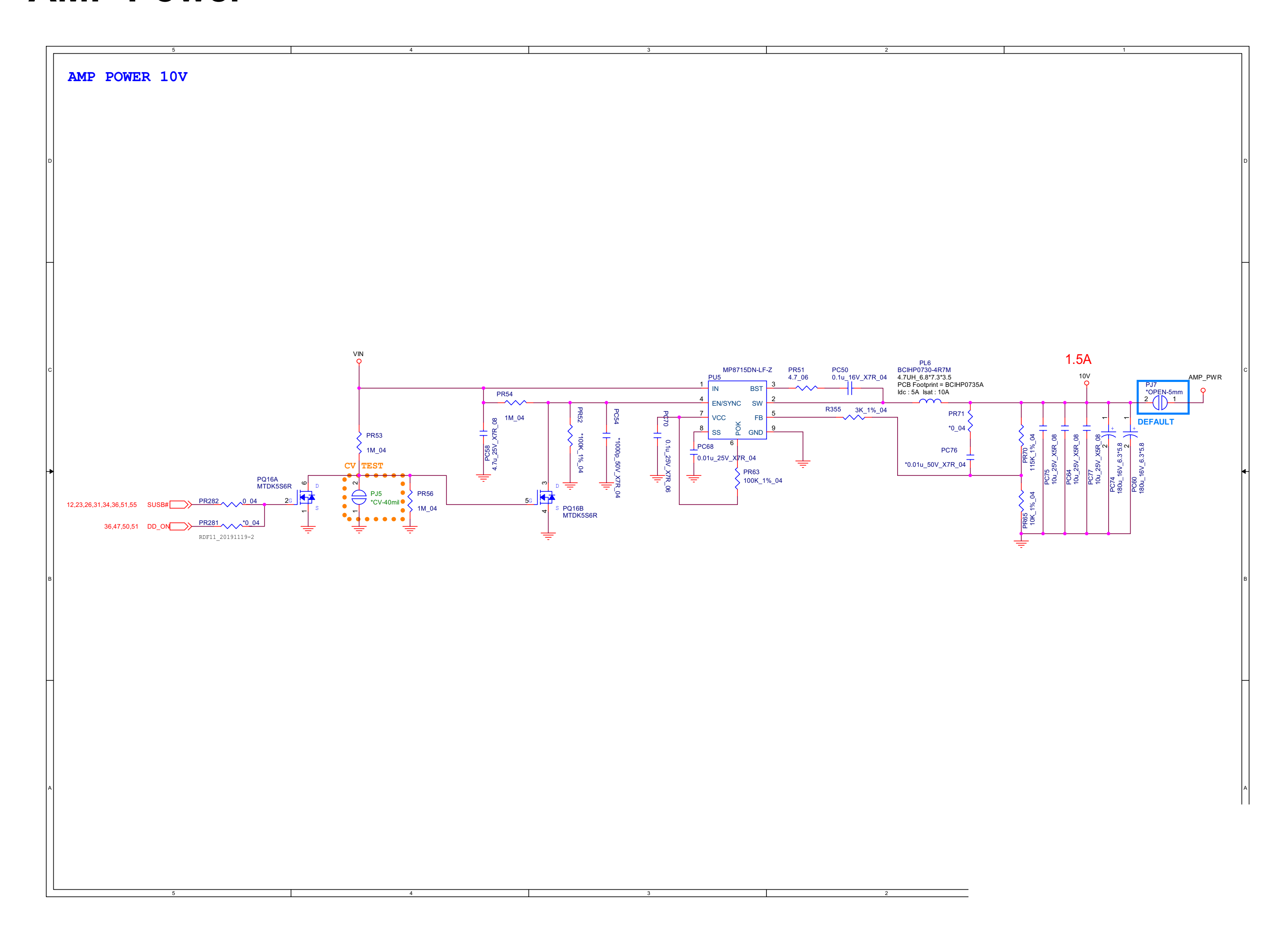
Codec ALC1220



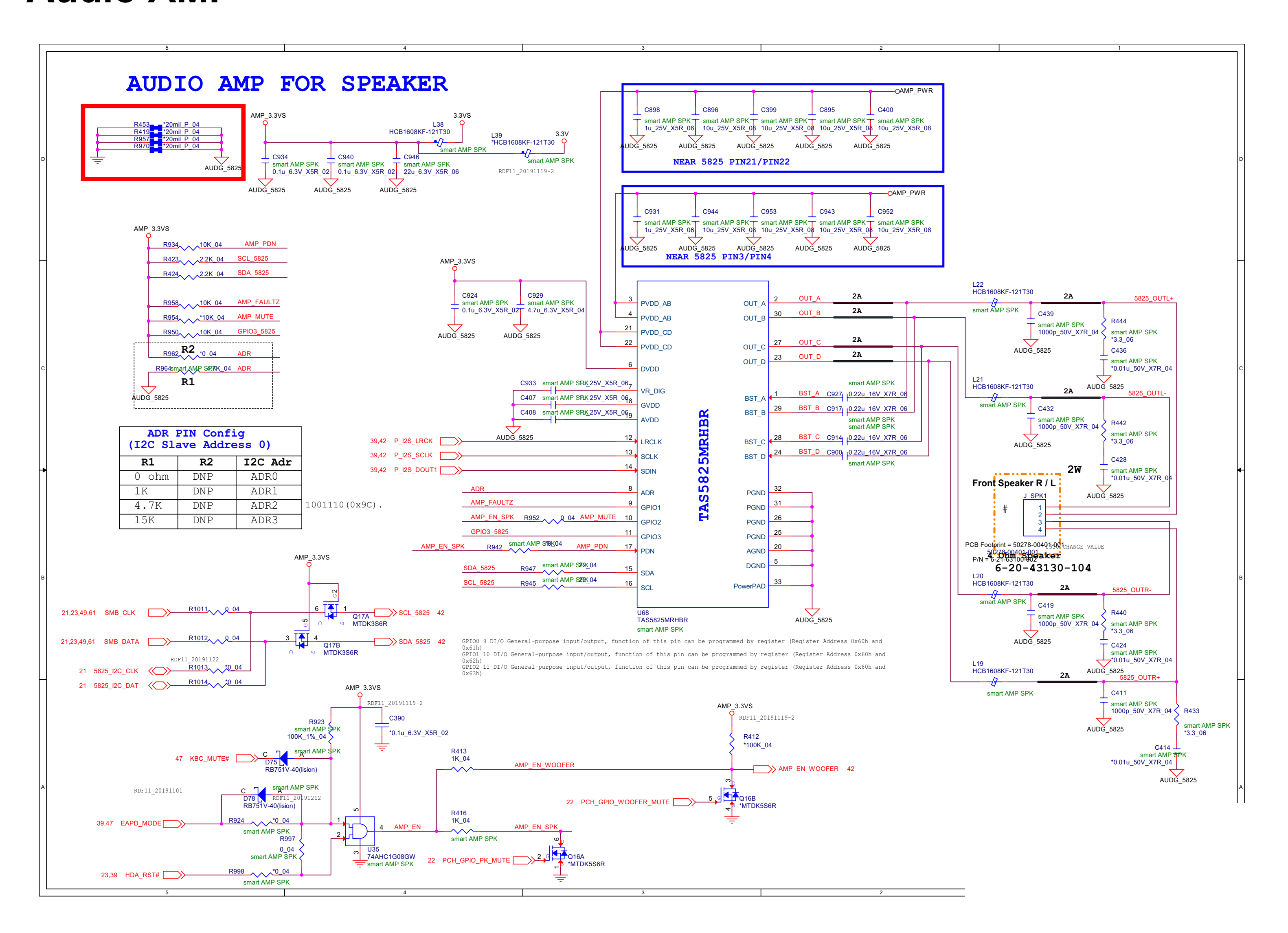
Sheet 38 of 71
Codec ALC1220

AMP Power

Sheet 39 of 71
AMP Power



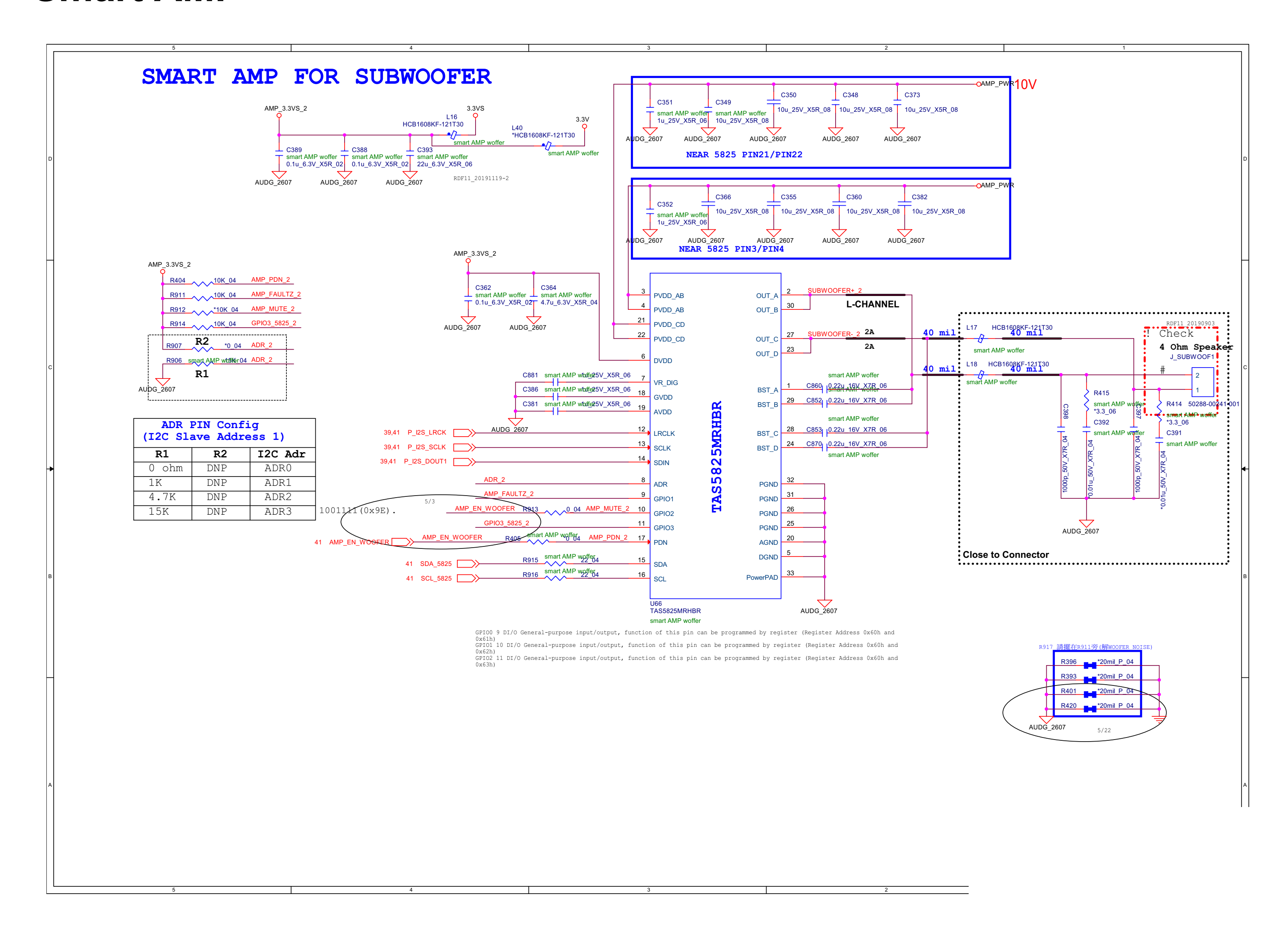
Audio AMP



Sheet 40 of 71
Audio AMP

Smart AMP

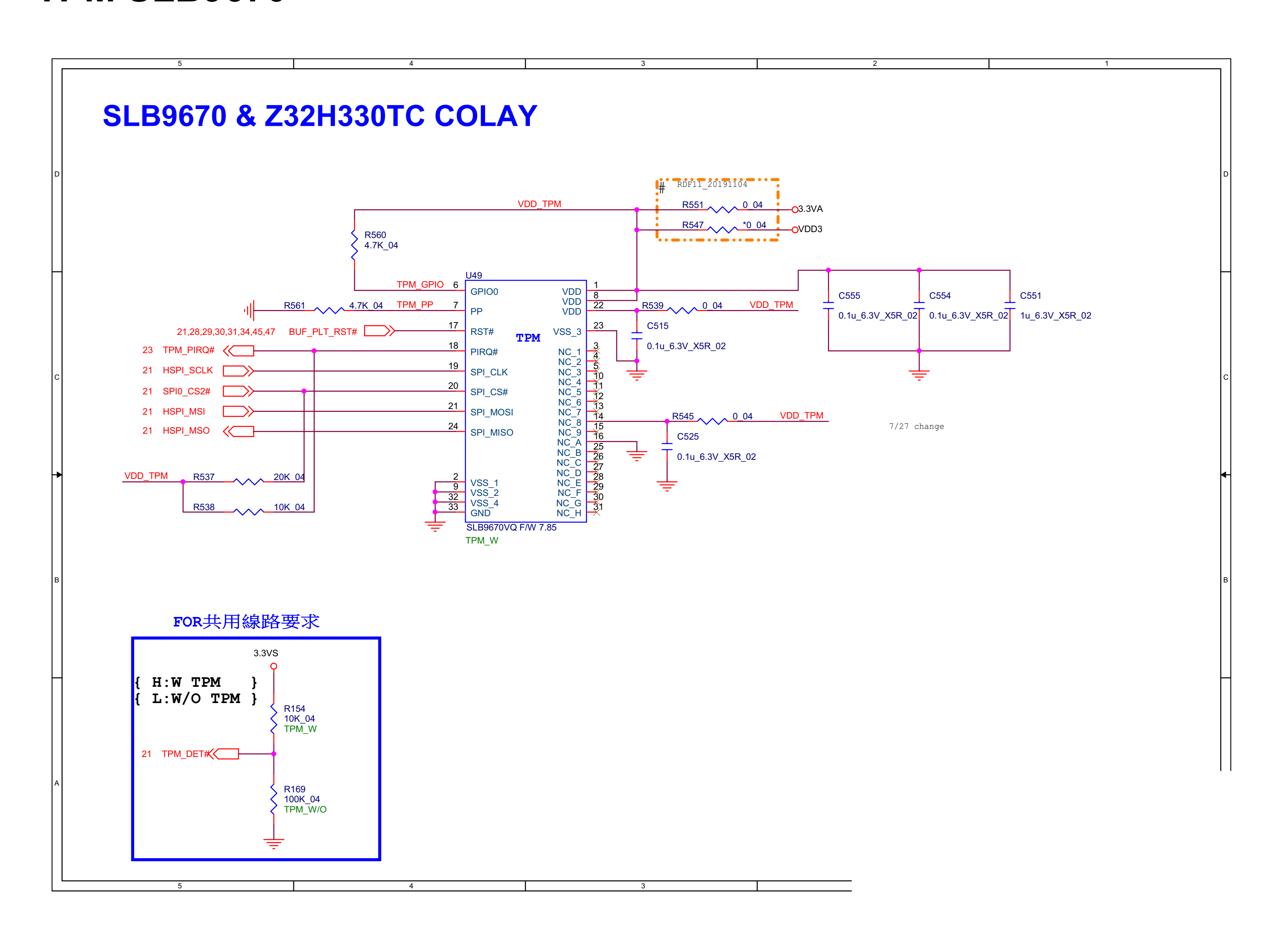
Sheet 41 of 71
Smart AMP



ADR PIN Config
(I2C Slave Address 1)

R1	R2	I2C Adr
0 ohm	DNP	ADR0
1K	DNP	ADR1
4.7K	DNP	ADR2
15K	DNP	ADR3

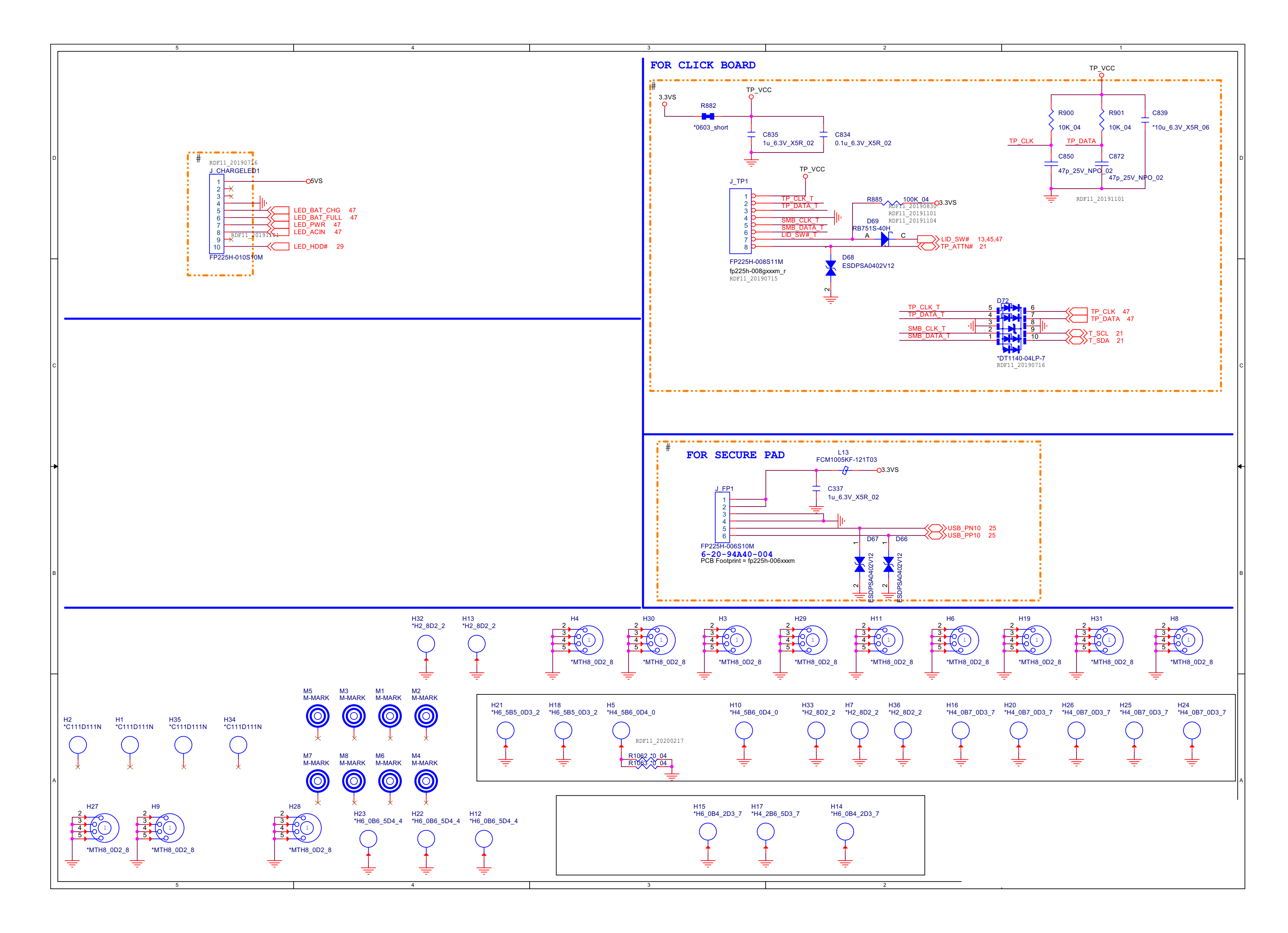
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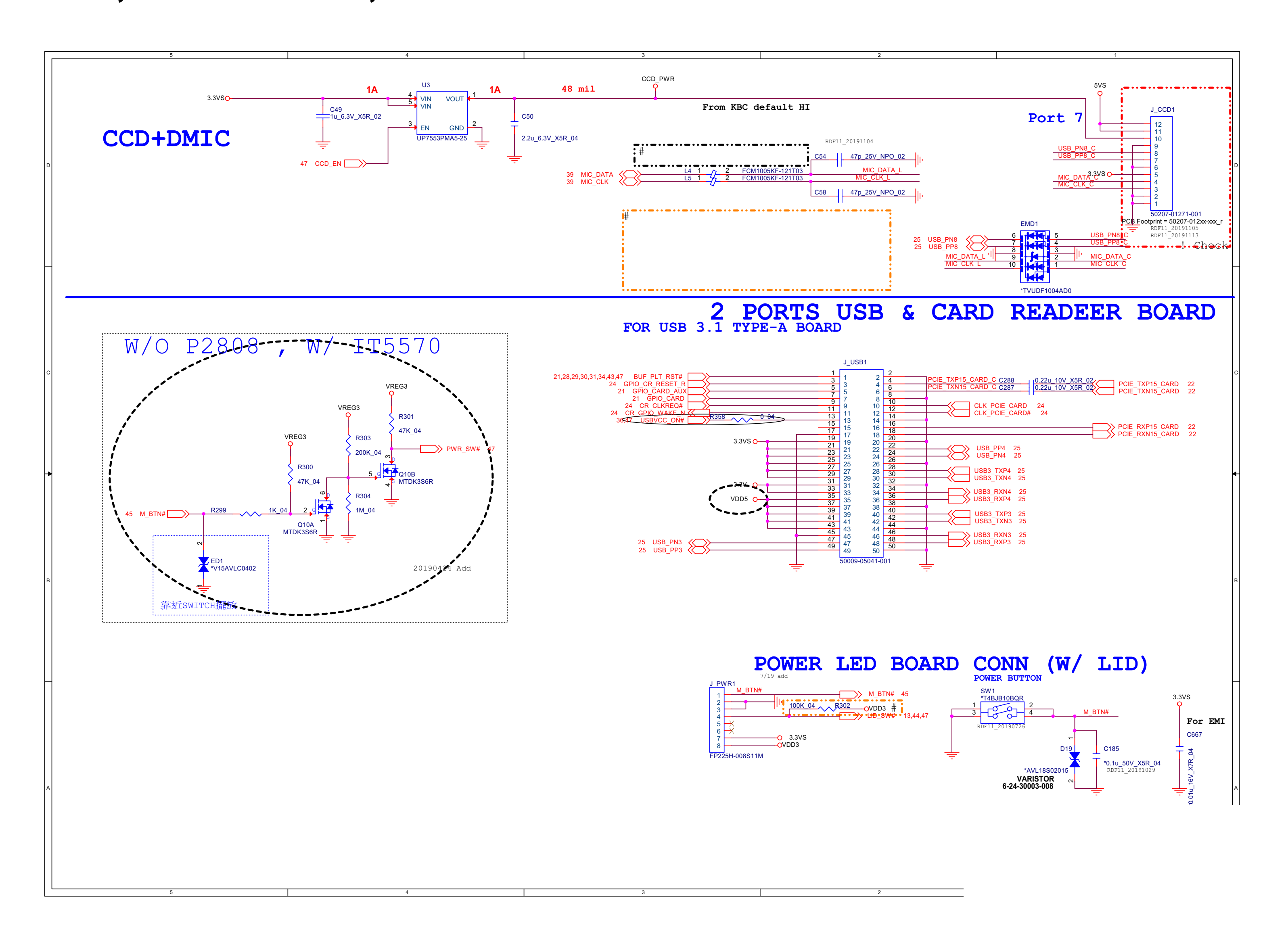
Sheet 42 of 71
TPM SLB9670

LED, TP, FP Con.

Sheet 43 of 71
LED, TP, FP Con.



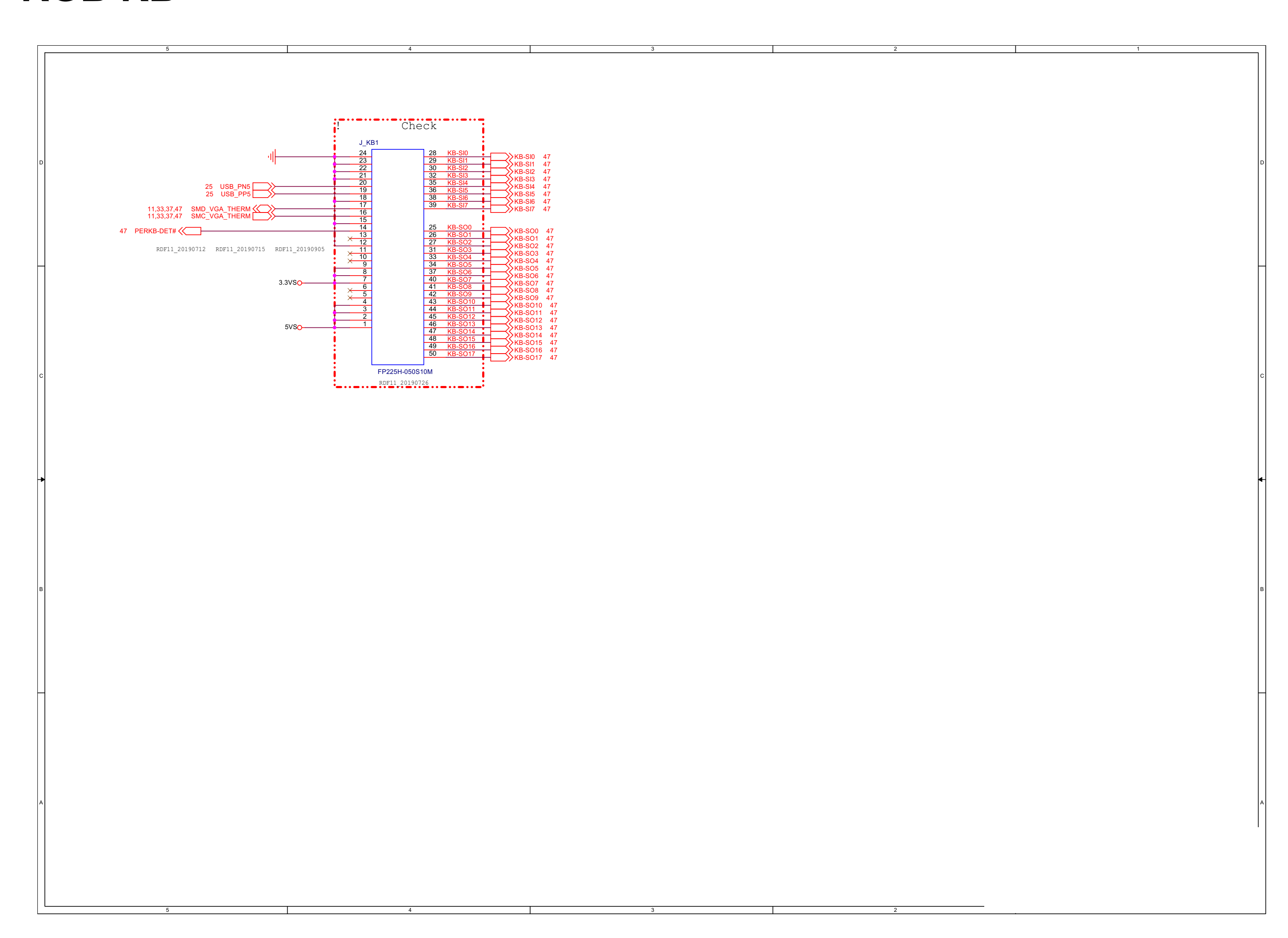
CCD, Card Reader, Power SW



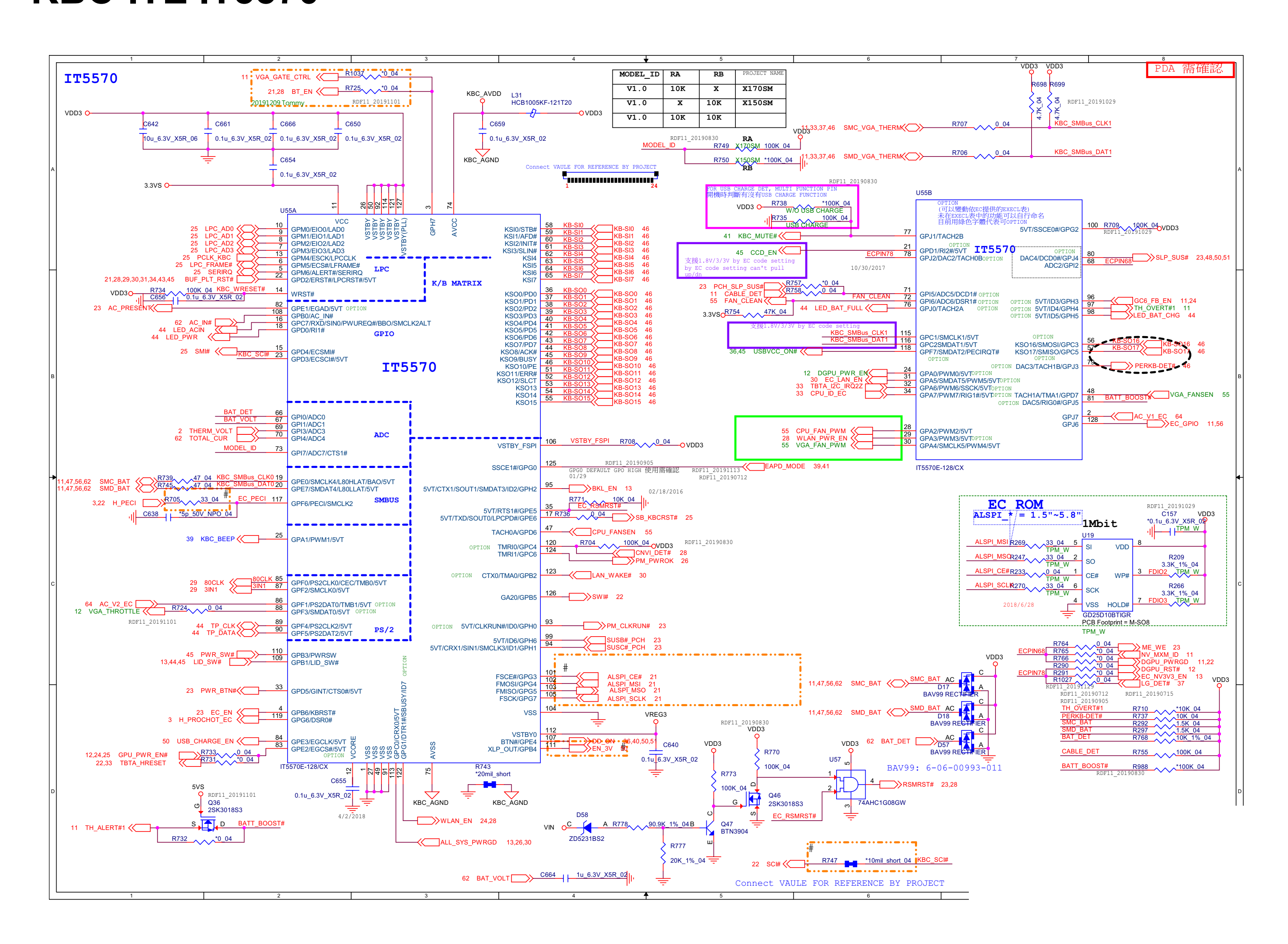
Sheet 44 of 71
CCD, Card Reader,
Power SW

RGB KB

Sheet 45 of 71
RGB KB



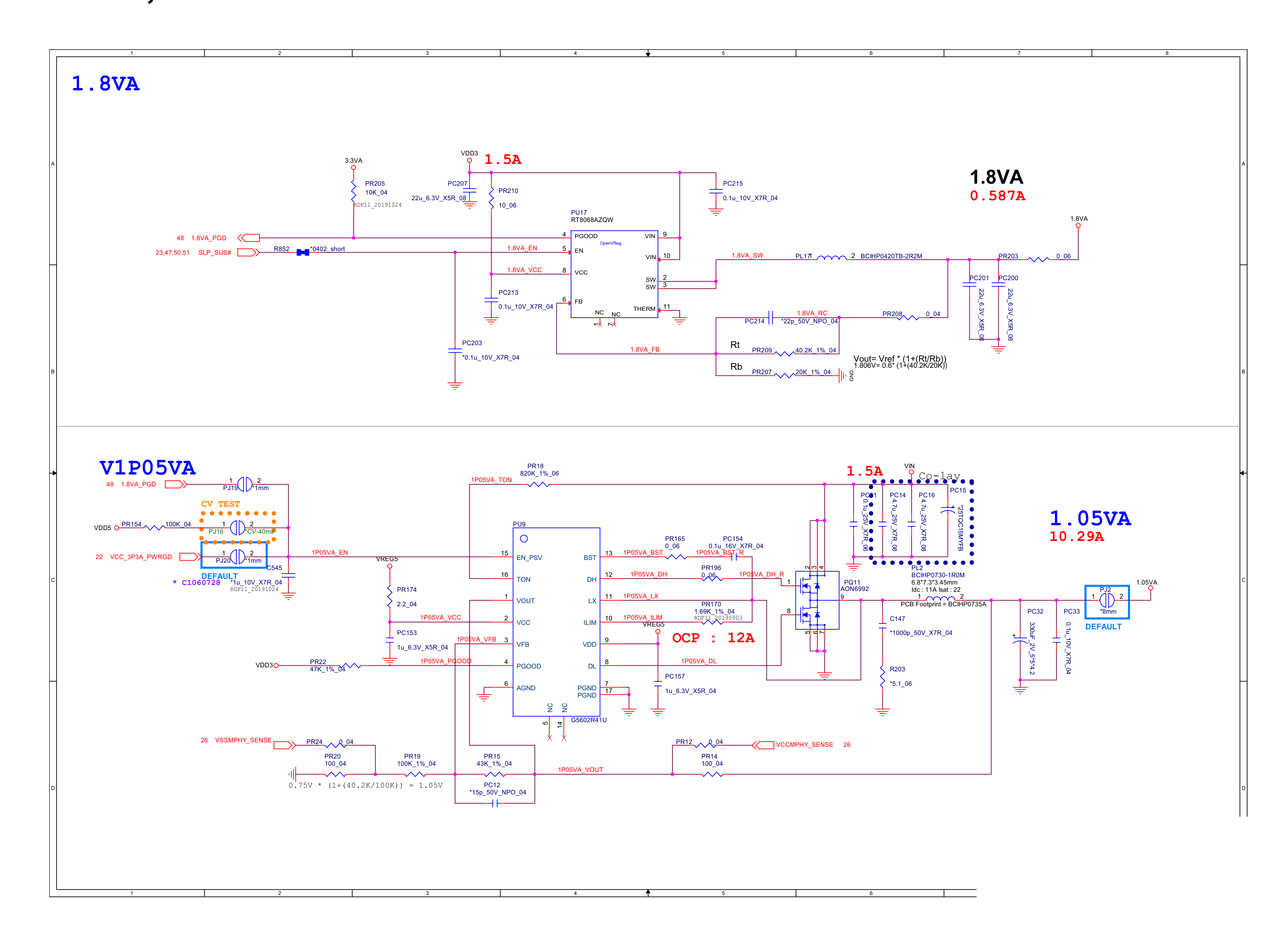
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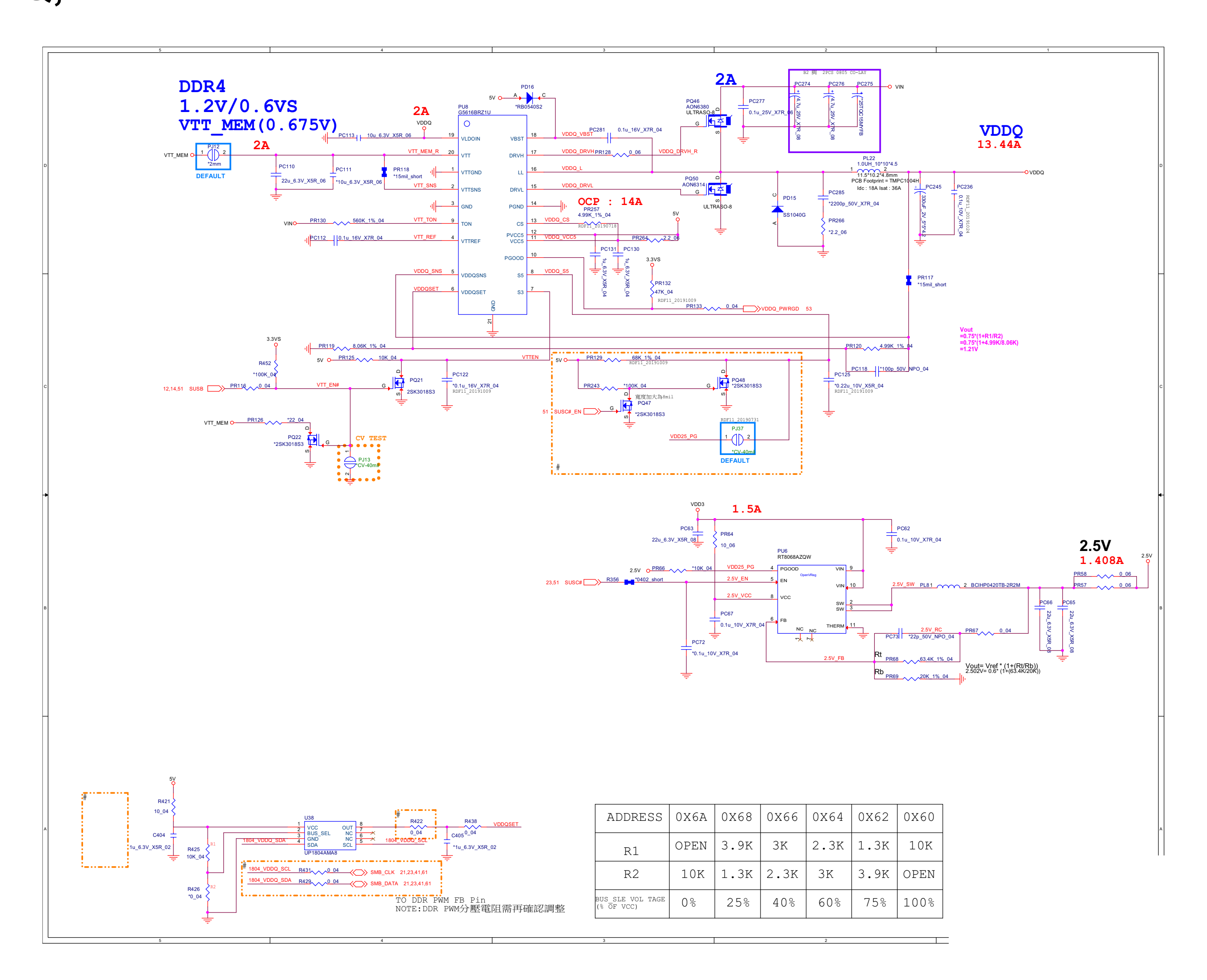
Sheet 46 of 71
KBC-ITE IT5570

1.8VA, 1.05VA

Sheet 47 of 71
1.8VA, 1.05VA



VDDQ, VTT

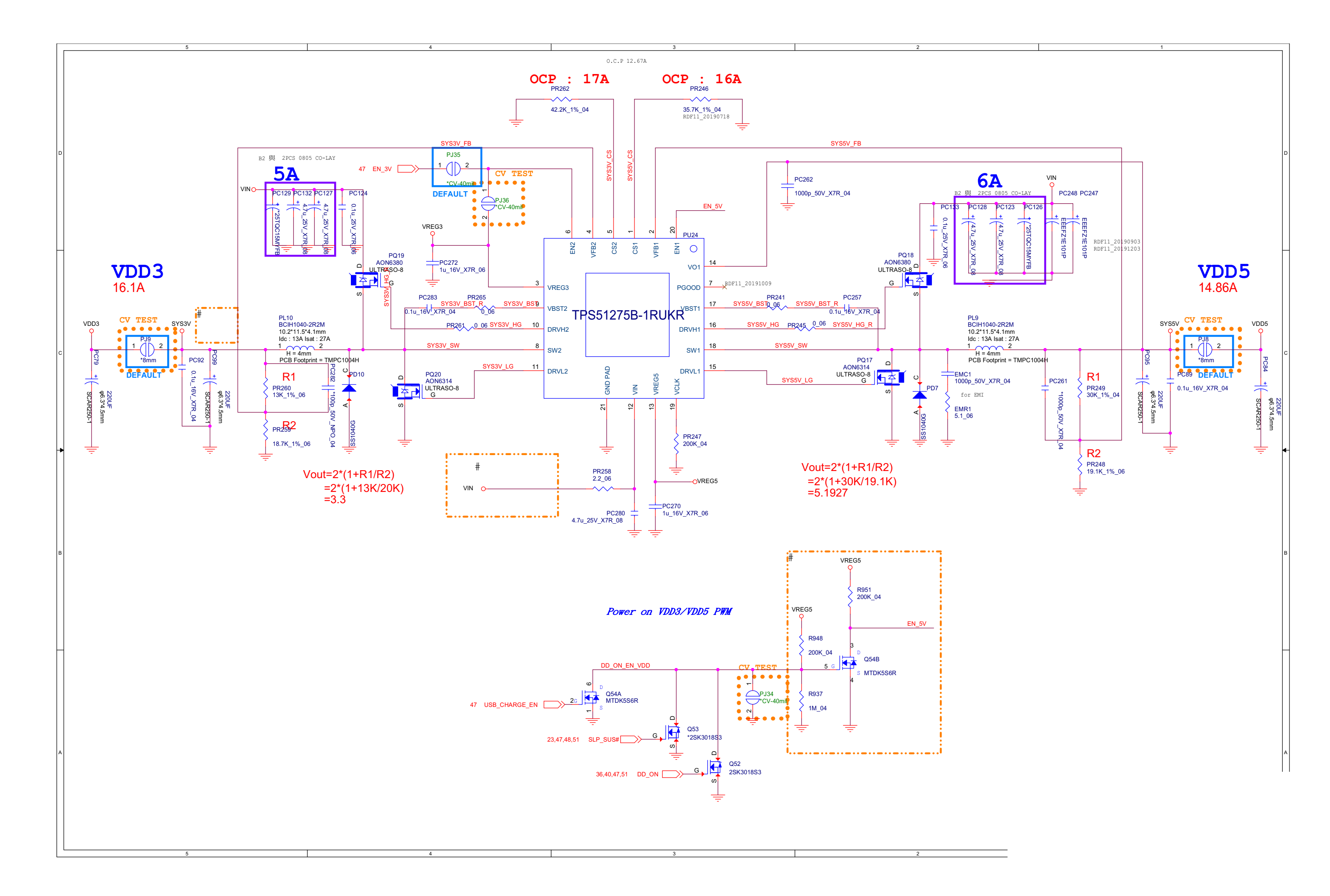


ADDRESS	0X6A	0X68	0X66	0X64	0X62	0X60
R1	OPEN	3.9K	3K	2.3K	1.3K	10K
R2	10K	1.3K	2.3K	3K	3.9K	OPEN
BUS_SLE VOL TAGE (% OF VCC)	0%	25%	40%	60%	75%	100%

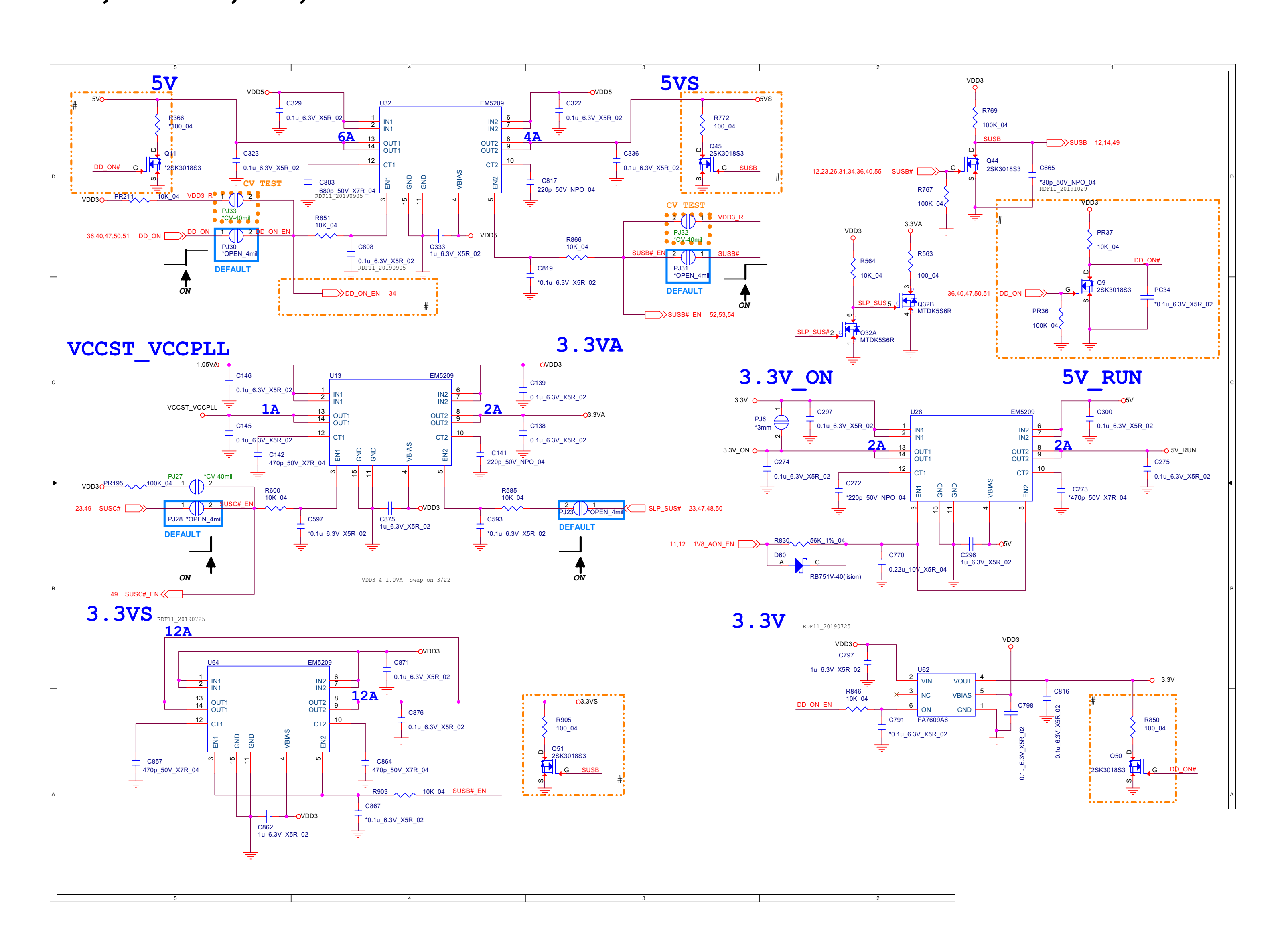
Sheet 48 of 71
VDDQ, VTT

VDD3, VDD5

Sheet 49 of 71
VDD3, VDD5



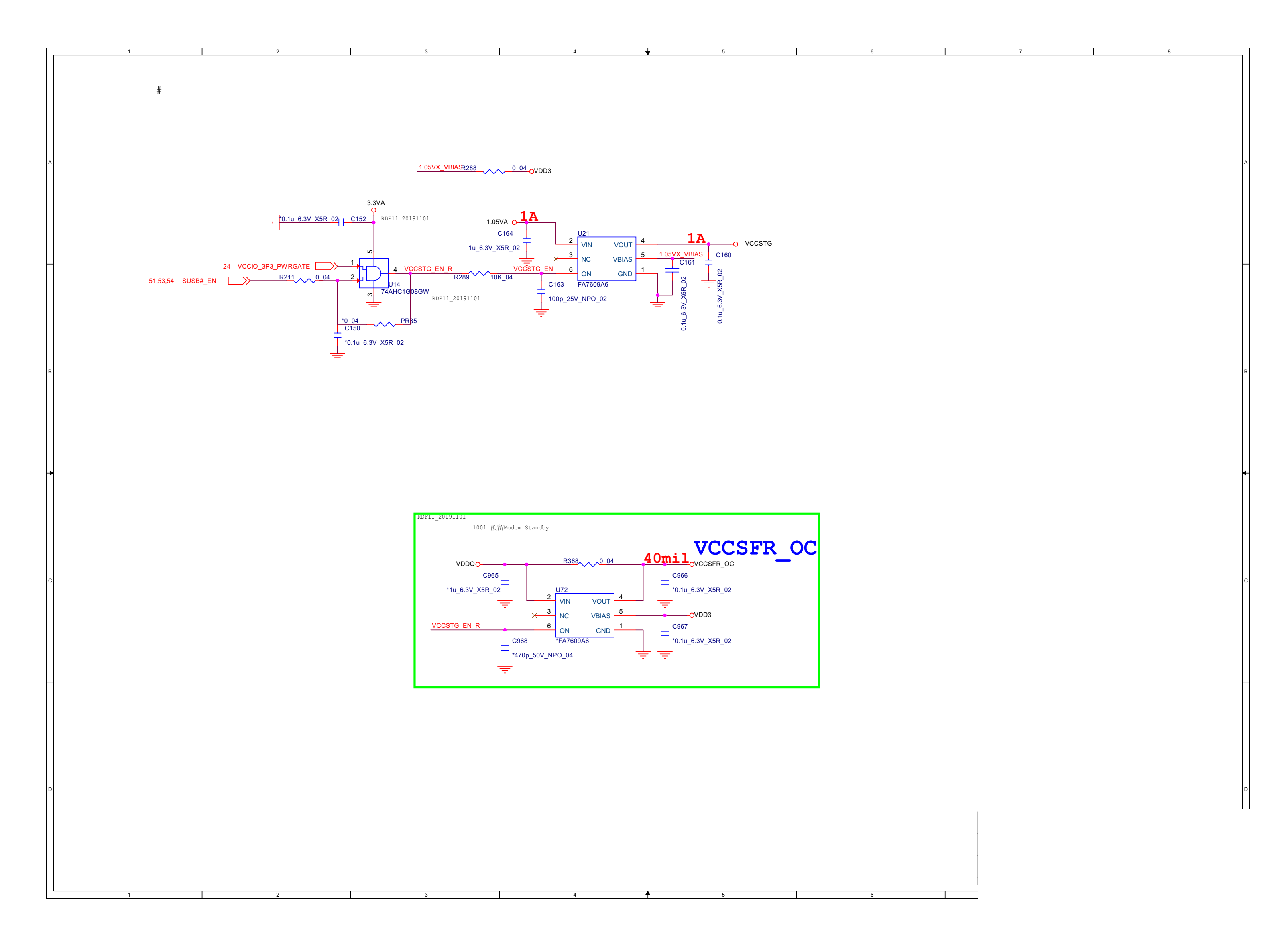
3.3V, 3.3VA, 5V, VCCST



Sheet 50 of 71
3.3V, 3.3VA, 5V,
VCCST

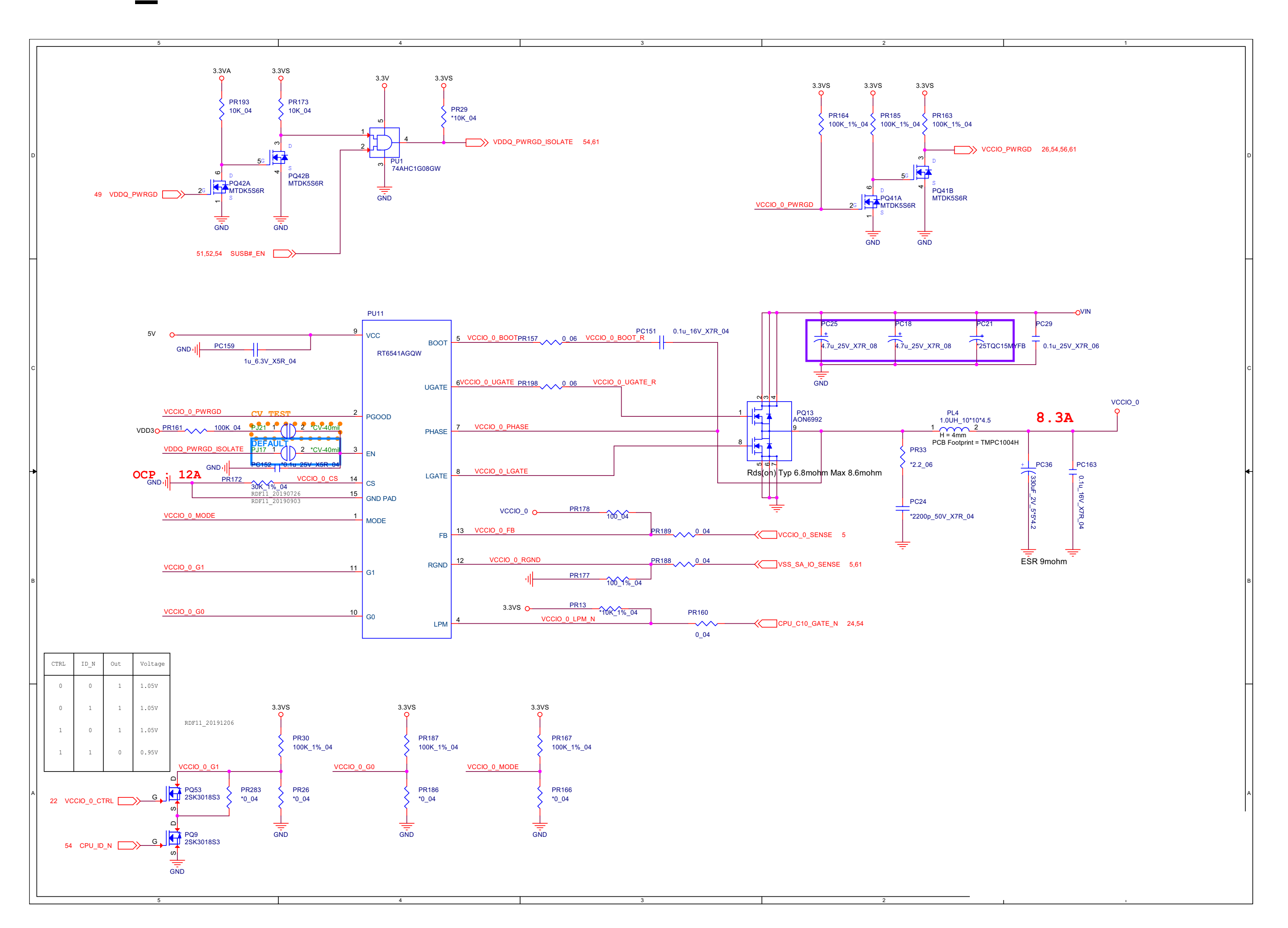
VCCSTG

Sheet 51 of 71
VCCSTG



B.Schematic Diagrams

VCCIO_0

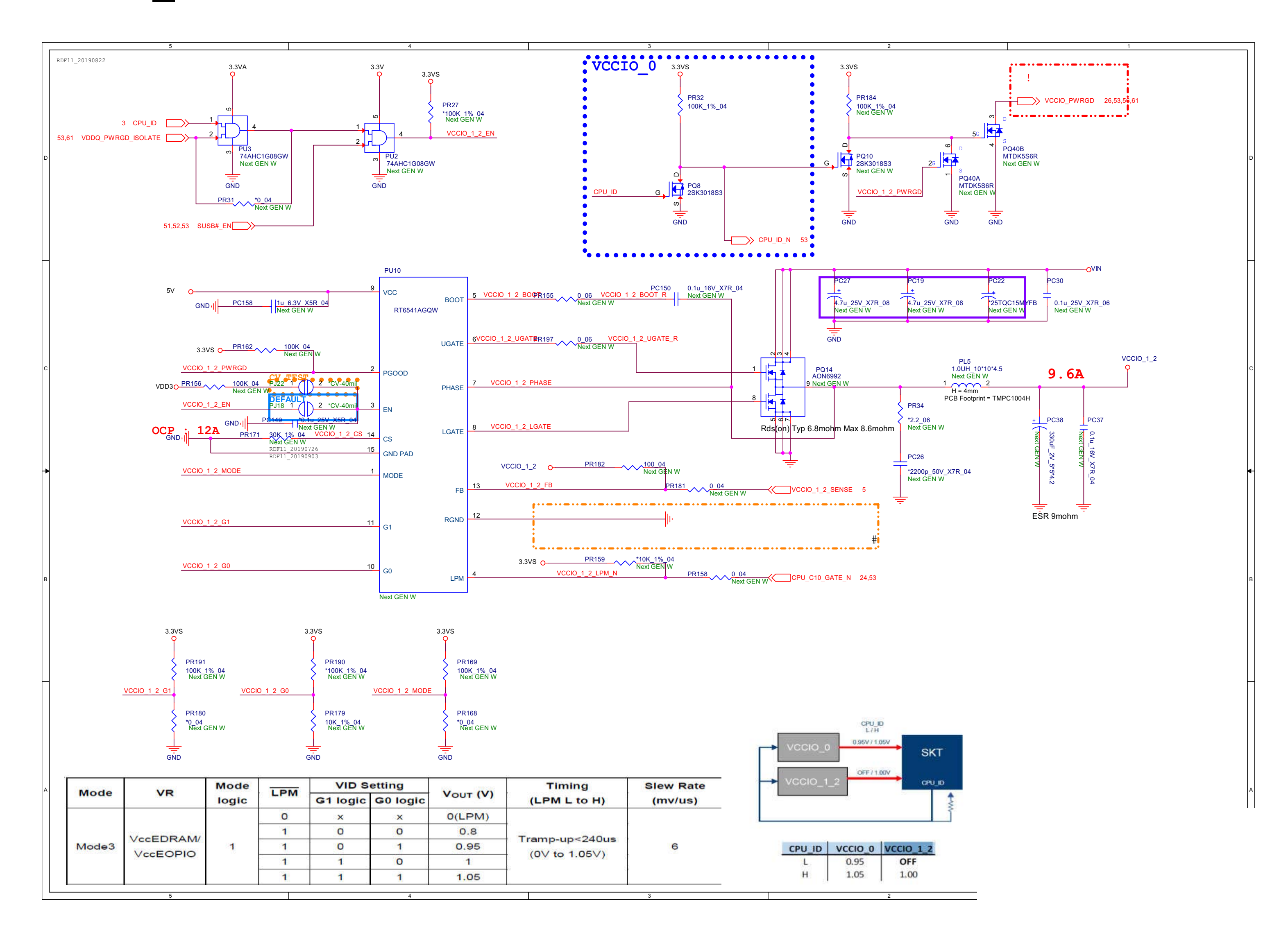


CTRL	ID_N	Out	Voltage
0	0	1	1.05V
0	1	1	1.05V
1	0	1	1.05V
1	1	0	0.95V

Sheet 52 of 71
VCCIO_0

VCCIO_1

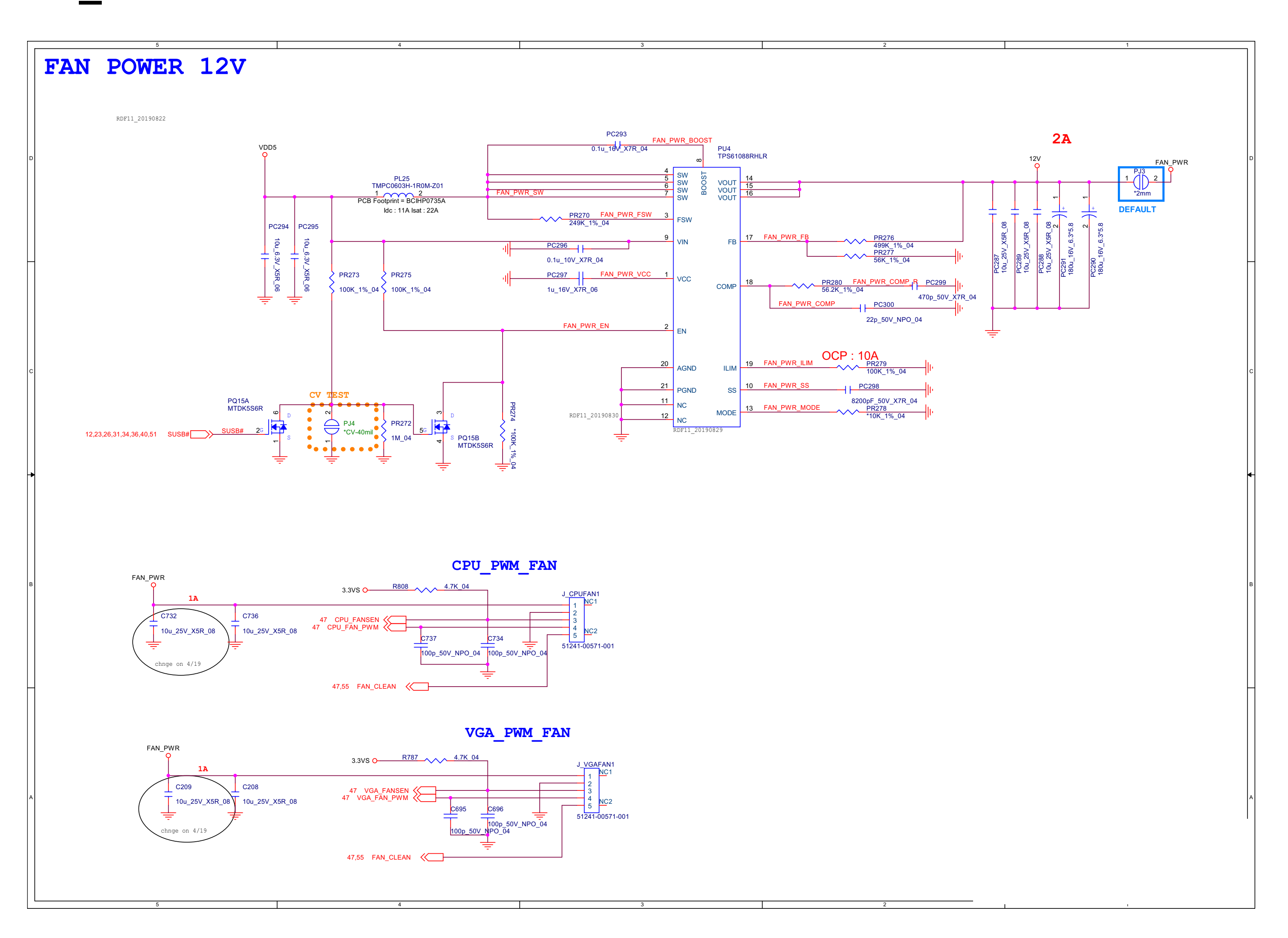
Sheet 53 of 71
VCCIO_1



Mode	VR	Mode logic	LPM	VID Setting G1 logic	VID Setting G0 logic	VOUT (V)	Timing (LPM L to H)	Slew Rate (mv/us)
Mode3	VccEDRAM/ VccEOPIO	1	0	x	x	0(LPM)	Tramp-up<240us (0V to 1.05V)	6
			1	0	0	0.8		
			1	0	1	0.95		
			1	1	0	1		
			1	1	1	1.05		

CPU_ID	VCCIO_0	VCCIO_1_2
L	0.95	OFF
H	1.05	1.00

Fan_Power

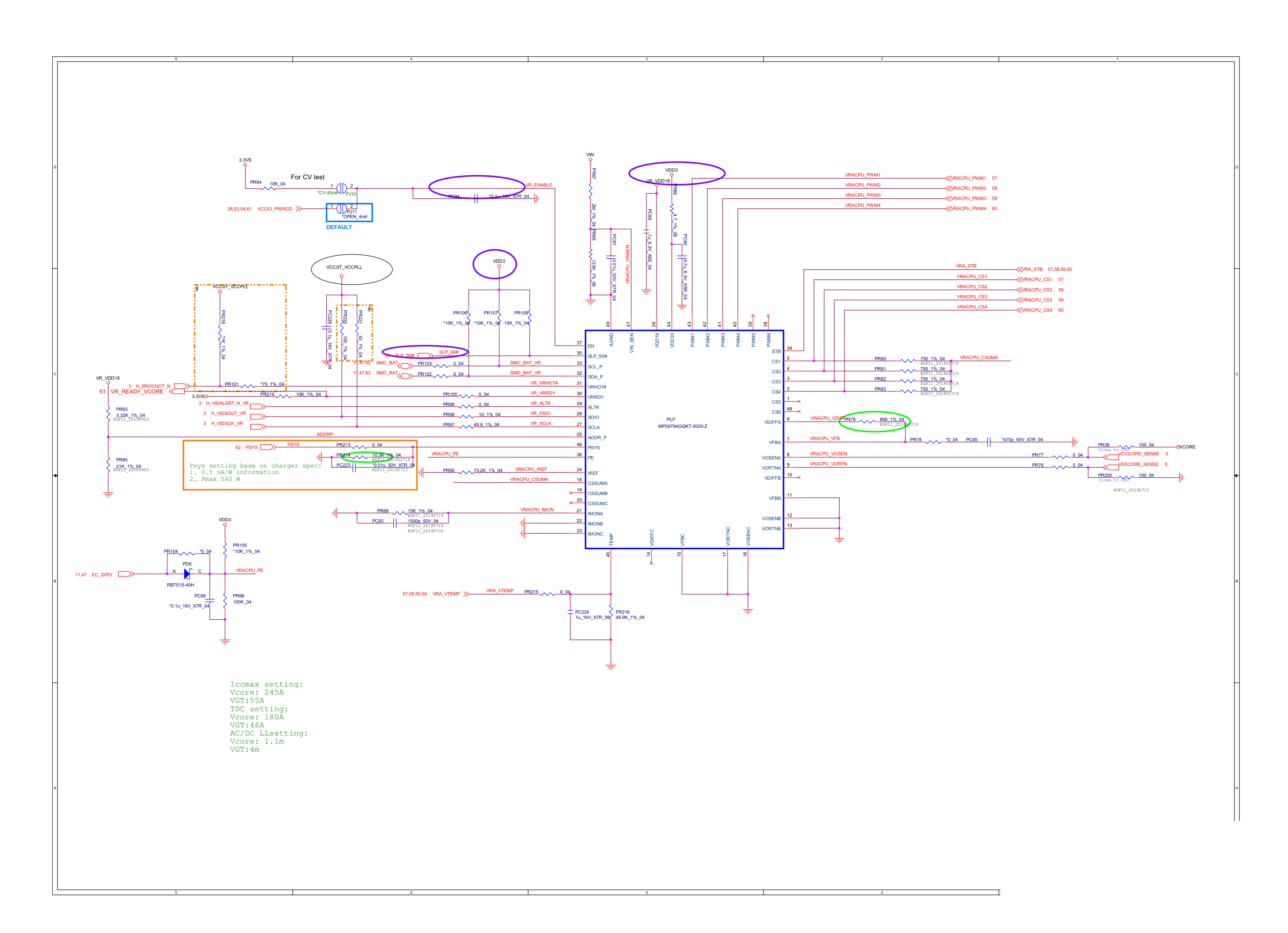


Sheet 54 of 71
Fan_Power

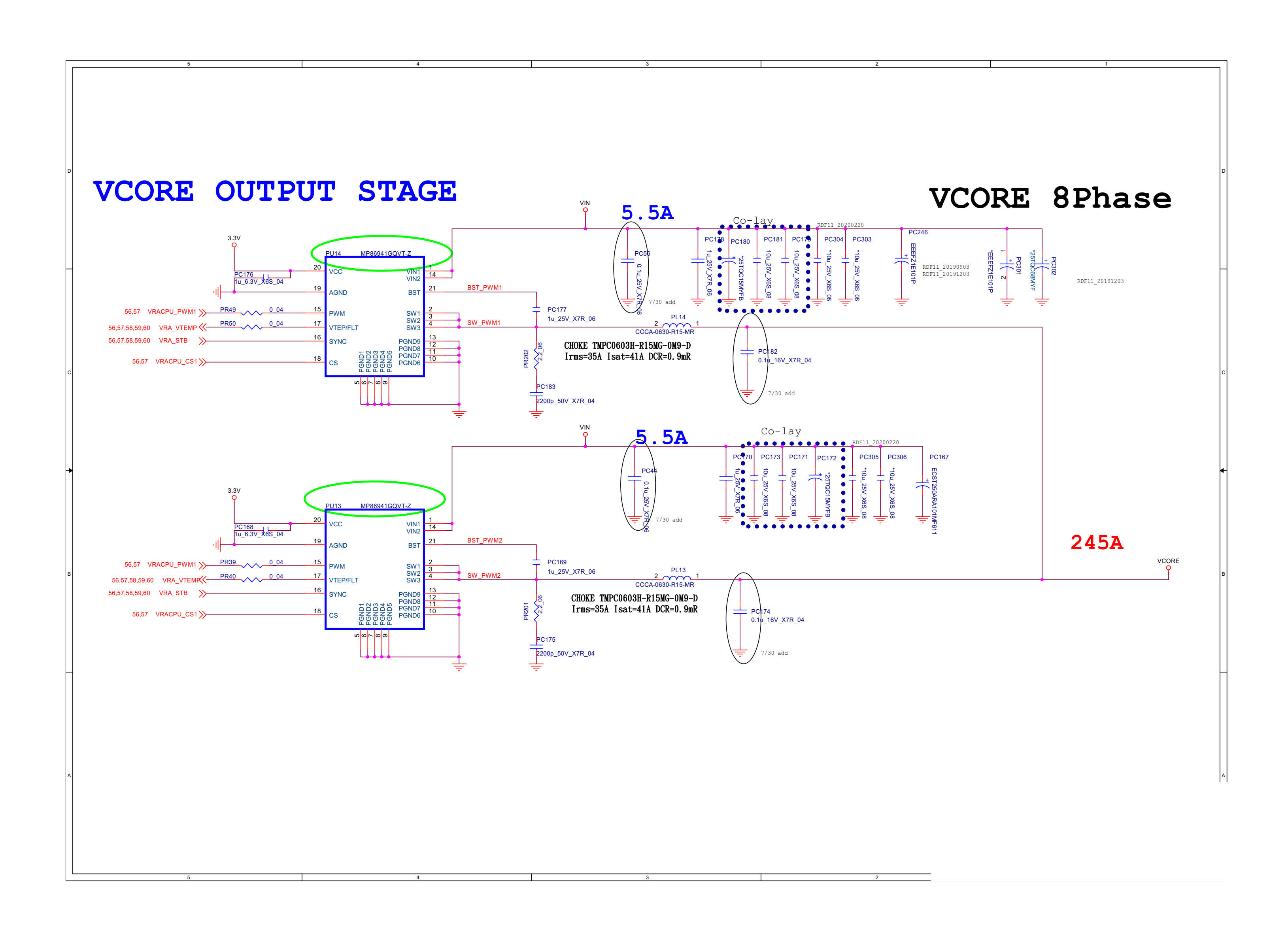
B.Schematic Diagrams

VCore 1/5

Sheet 55 of 71
VCore 1/5

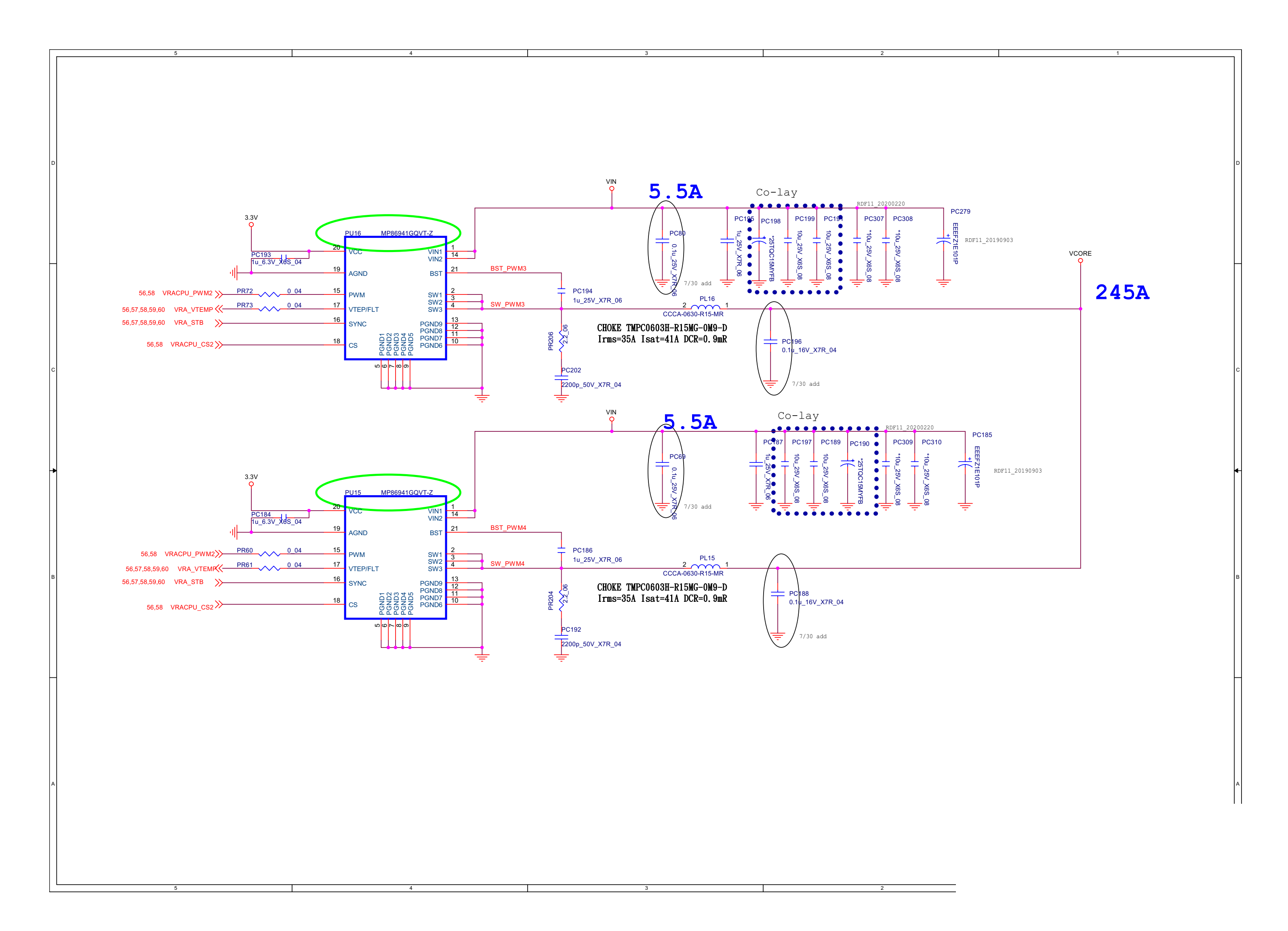


VCore 2/5

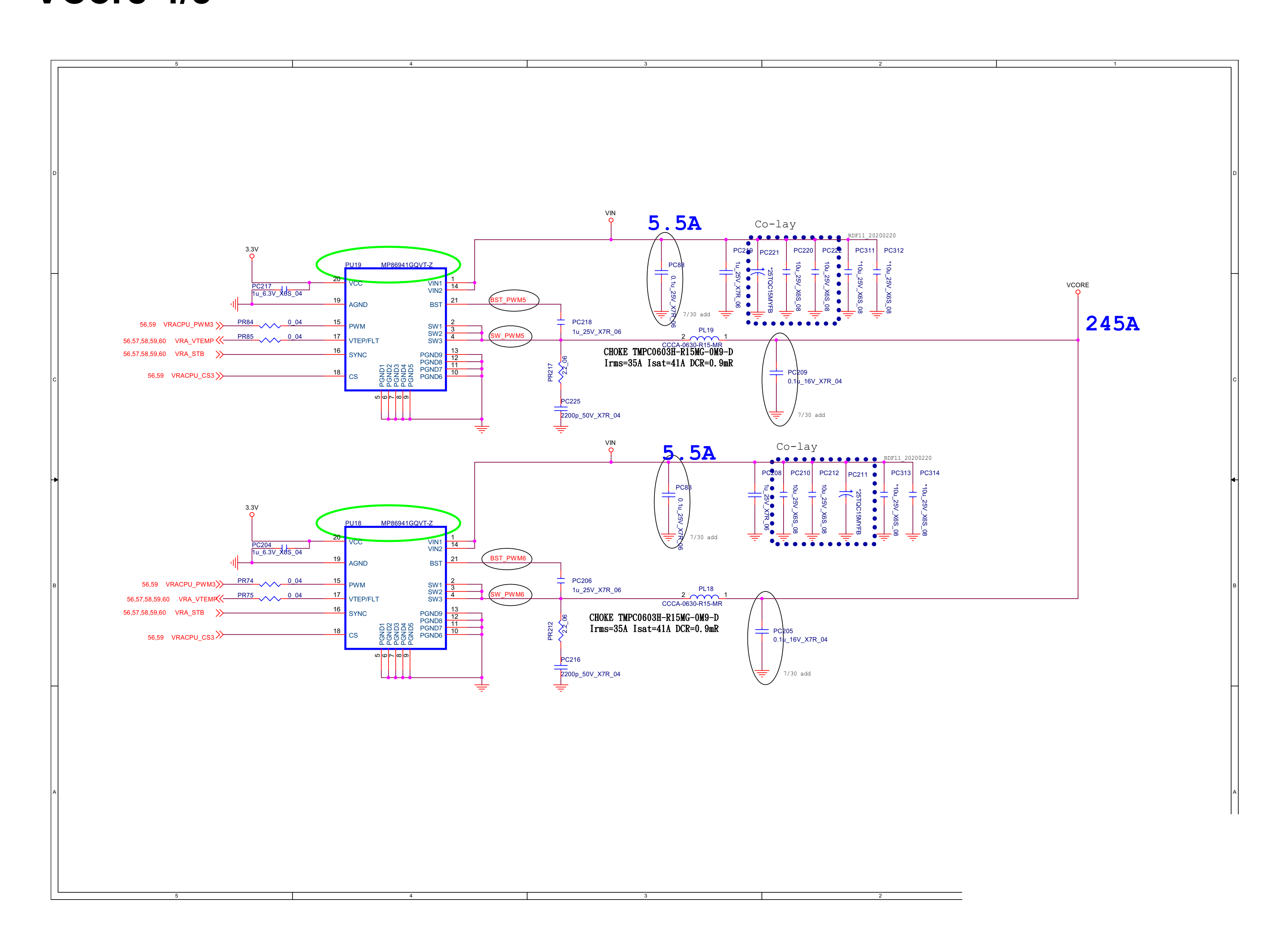

VCORE OUTPUT STAGE
VCORE 8Phase
5.5A
5.5A
245A
Co-lay
Co-lay
VIN
VCORE
3.3V
PU14 MP86941GQVT-Z
PU13 MP86941GQVT-Z
VCC
AGND
PWM
VTEP/FLT
SYNC
CS
VIN1
VIN2
BST
SW1
SW2
SW3
PGND9
PGND8
PGND7
PGND6
BST_PWM1
SW_PWM1
BST_PWM2
SW_PWM2
VRACPU_PWM1
VRA_VTEMP
VRA_STB
VRACPU_CS1
PC177
1u_25V_X7R_06
PC169
1u_25V_X7R_06
PC183
2200p_50V_X7R_04
PC175
2200p_50V_X7R_04
PL14
PL13
CCCA-0630-R15-MR
CHOKE TMPC0603H-R15MG-0M9-D
Irms=35A Isat=41A DCR=0.9mR
PC182
0.1u_16V_X7R_04
PC174
0.1u_16V_X7R_04
7/30 add

VCore 3/5

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VCore 3/5



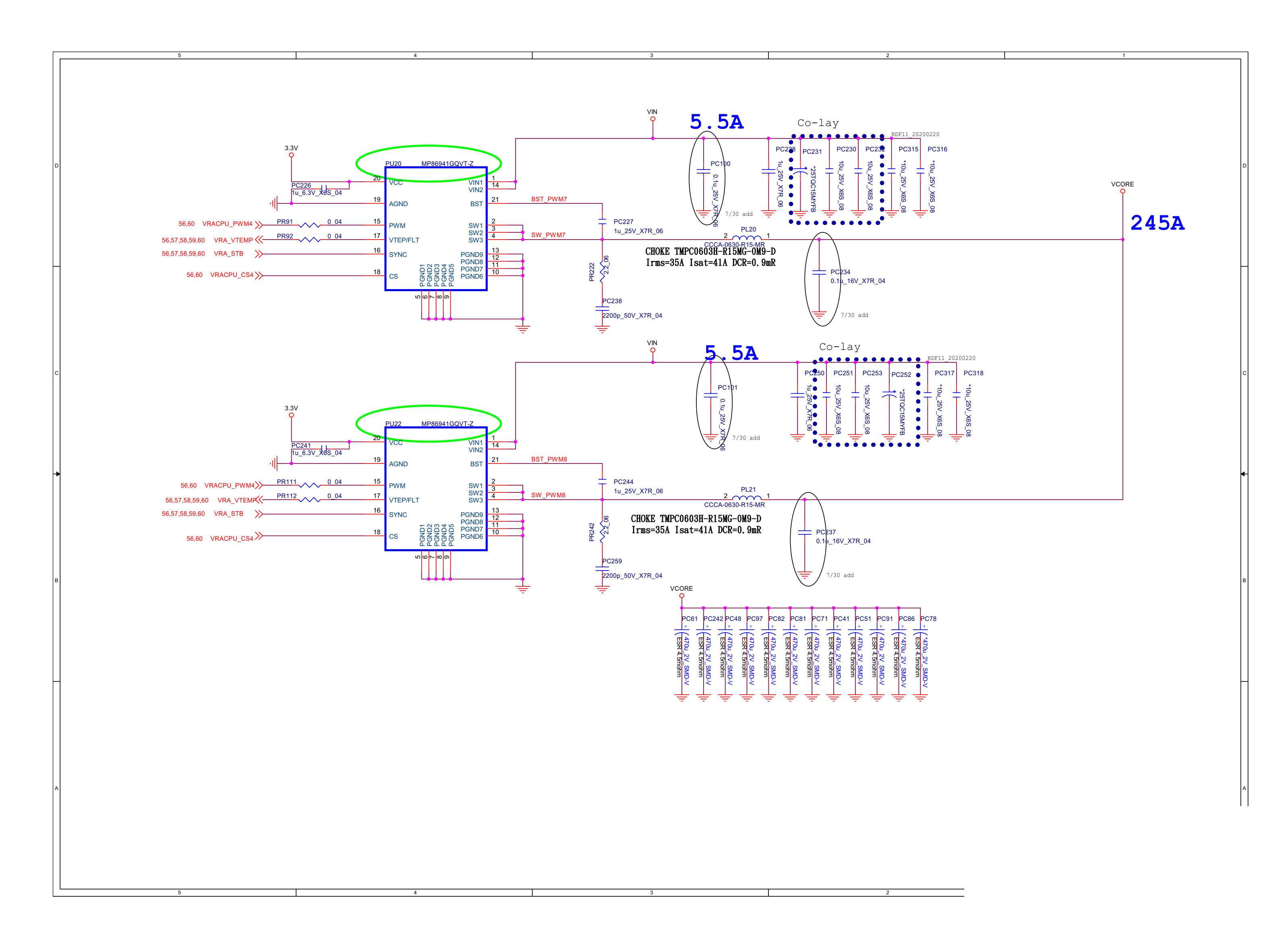
VCore 4/5



Sheet 58 of 71
VCore 4/5

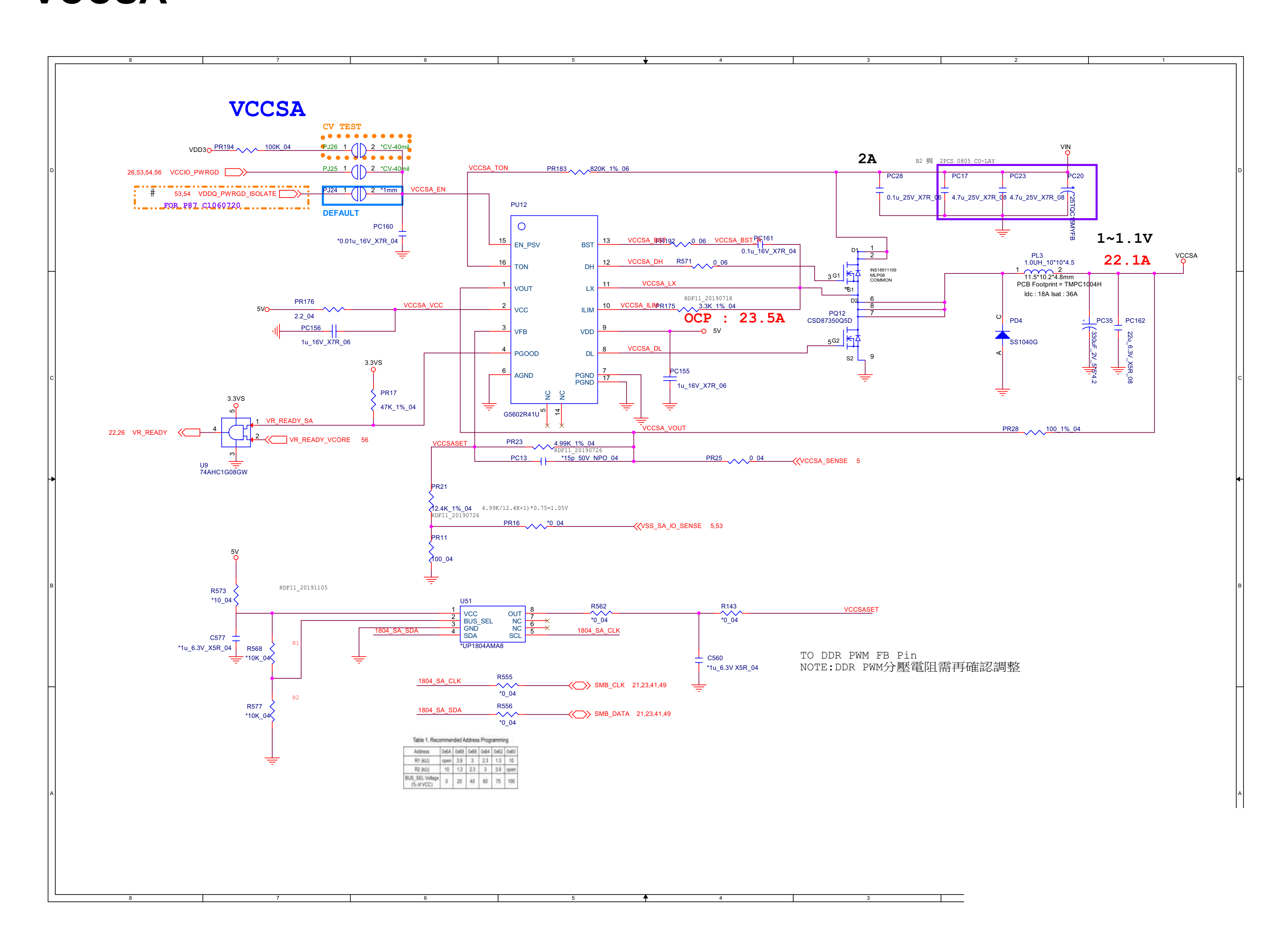
VCore 5/5

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VCore 5/5



B.Schematic Diagrams

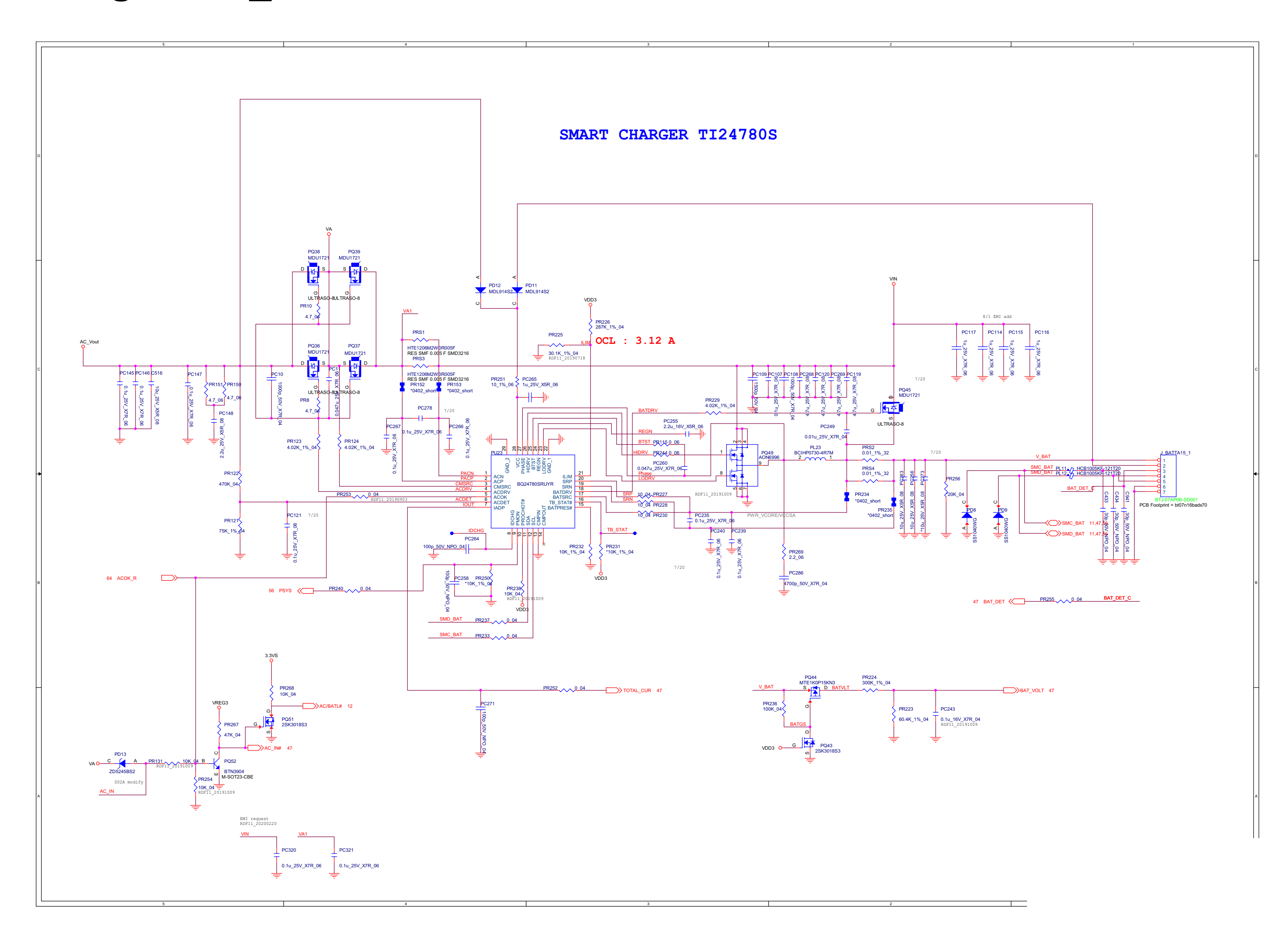
VCCSA



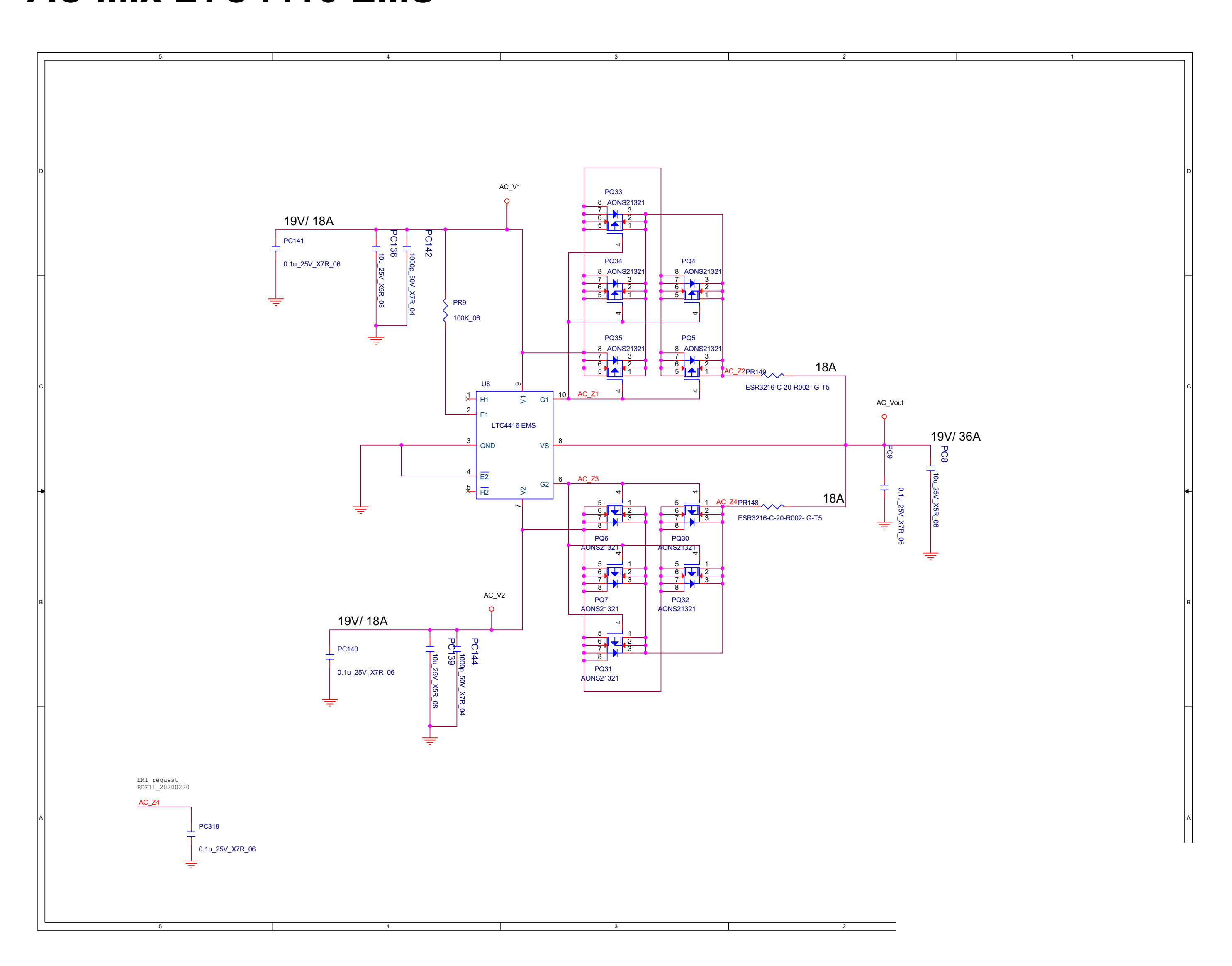
Sheet 60 of 71
VCCSA

Charger, DC_In

Sheet 61 of 71
Charger, DC_In



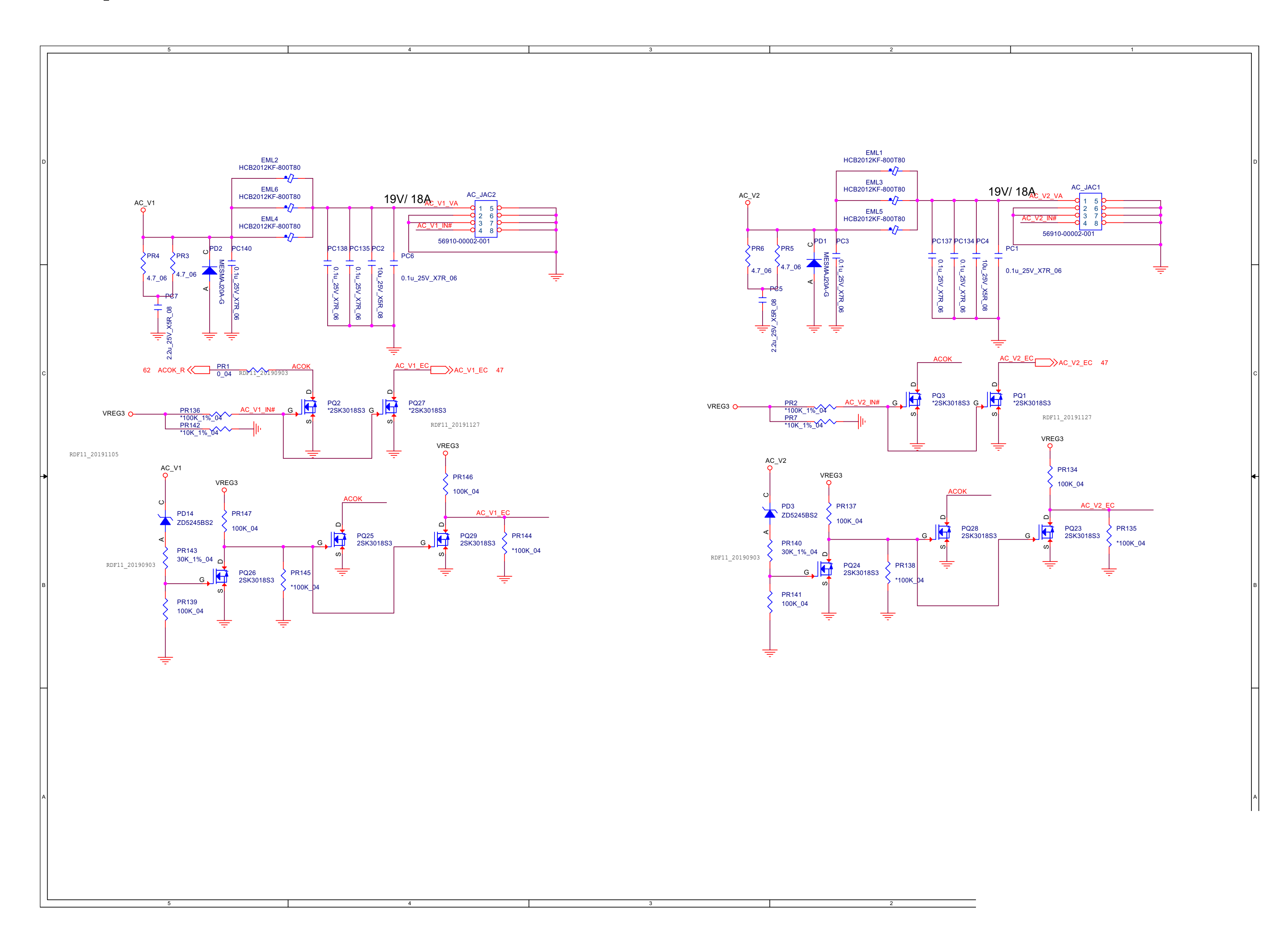
AC Mix LTC4416 EMS



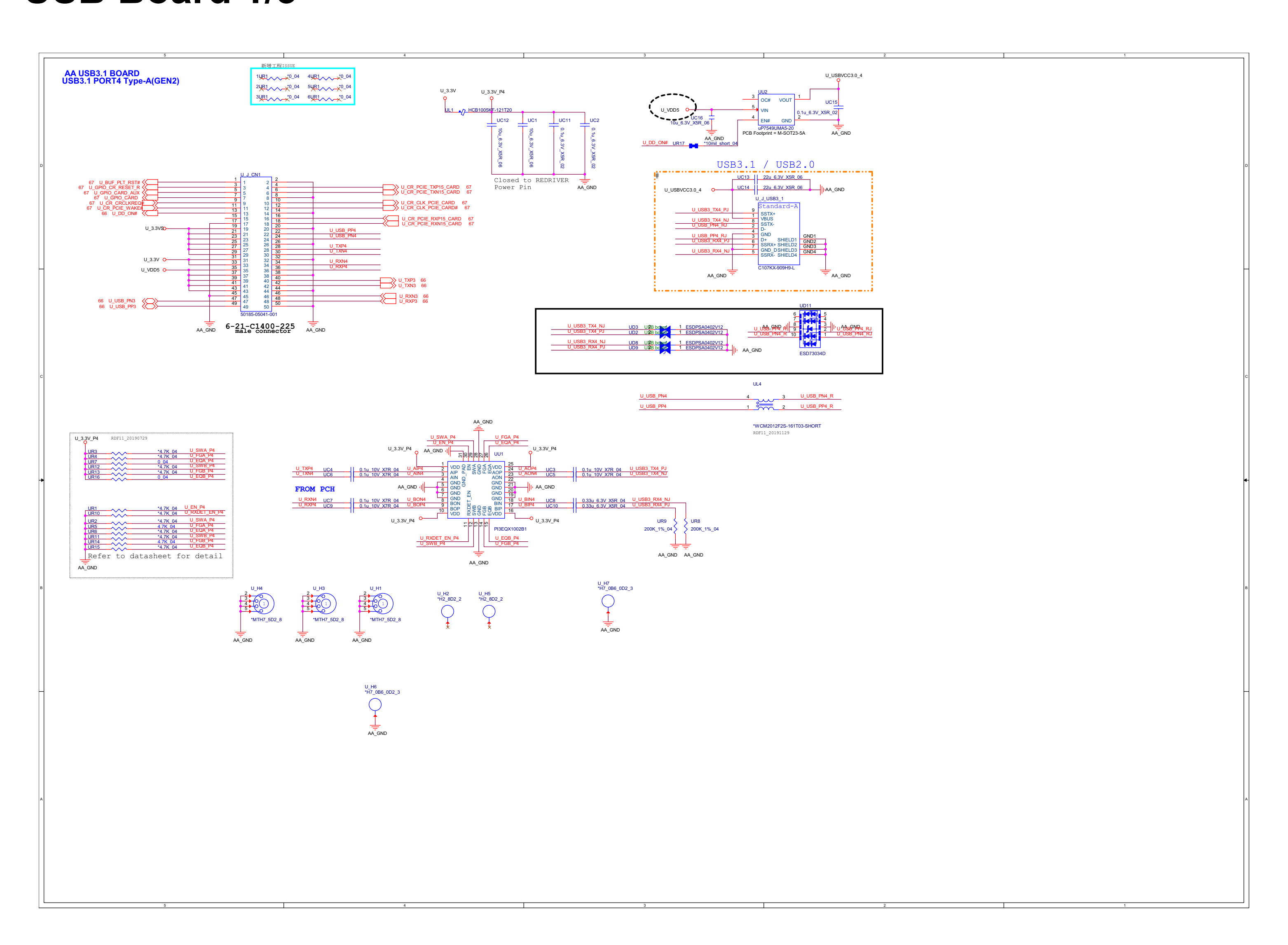
Sheet 62 of 71
AC Mix LTC4416
EMS

Adapter Conn.

Sheet 63 of 71
Adapter Conn.



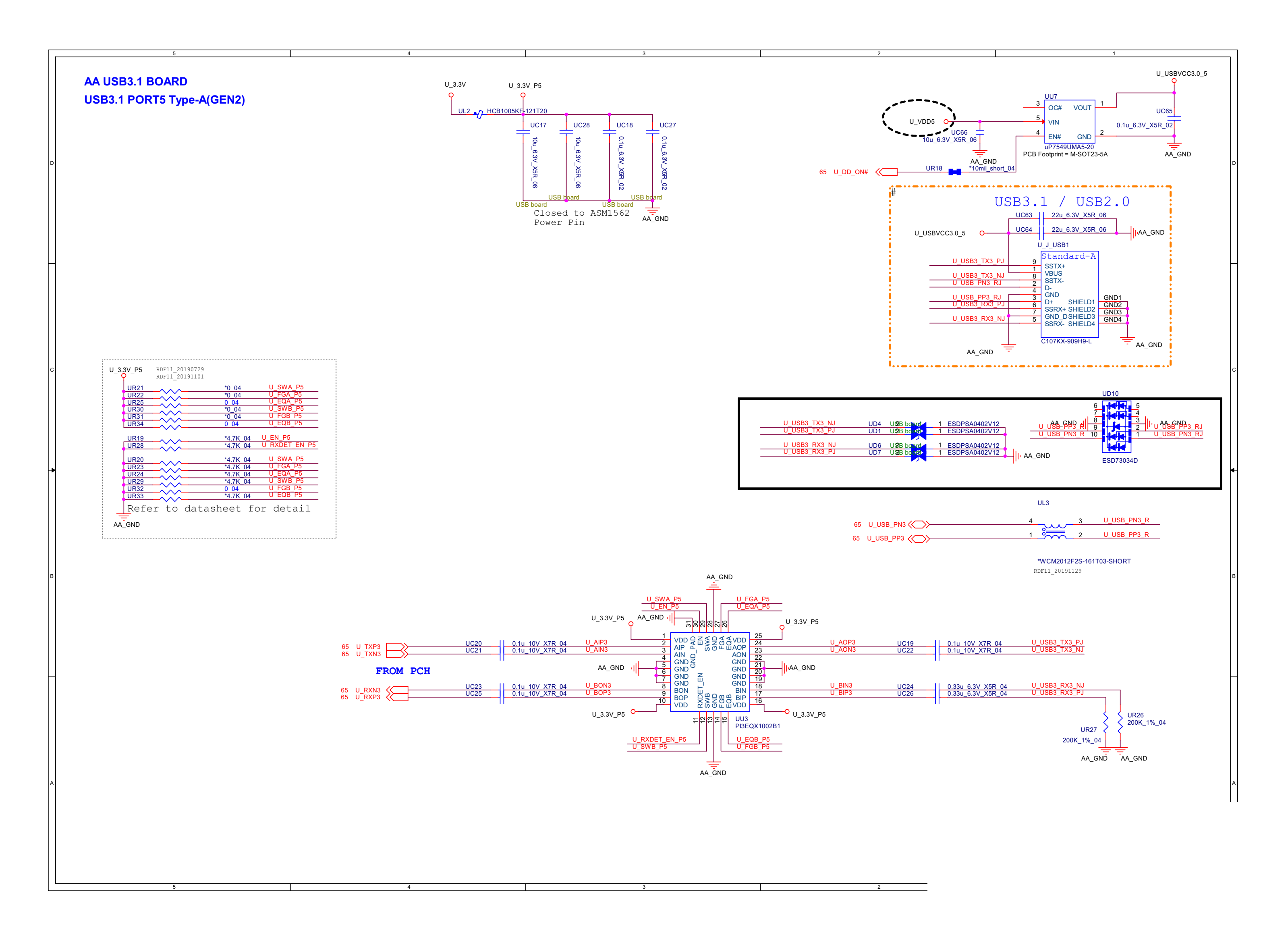
USB Board 1/3



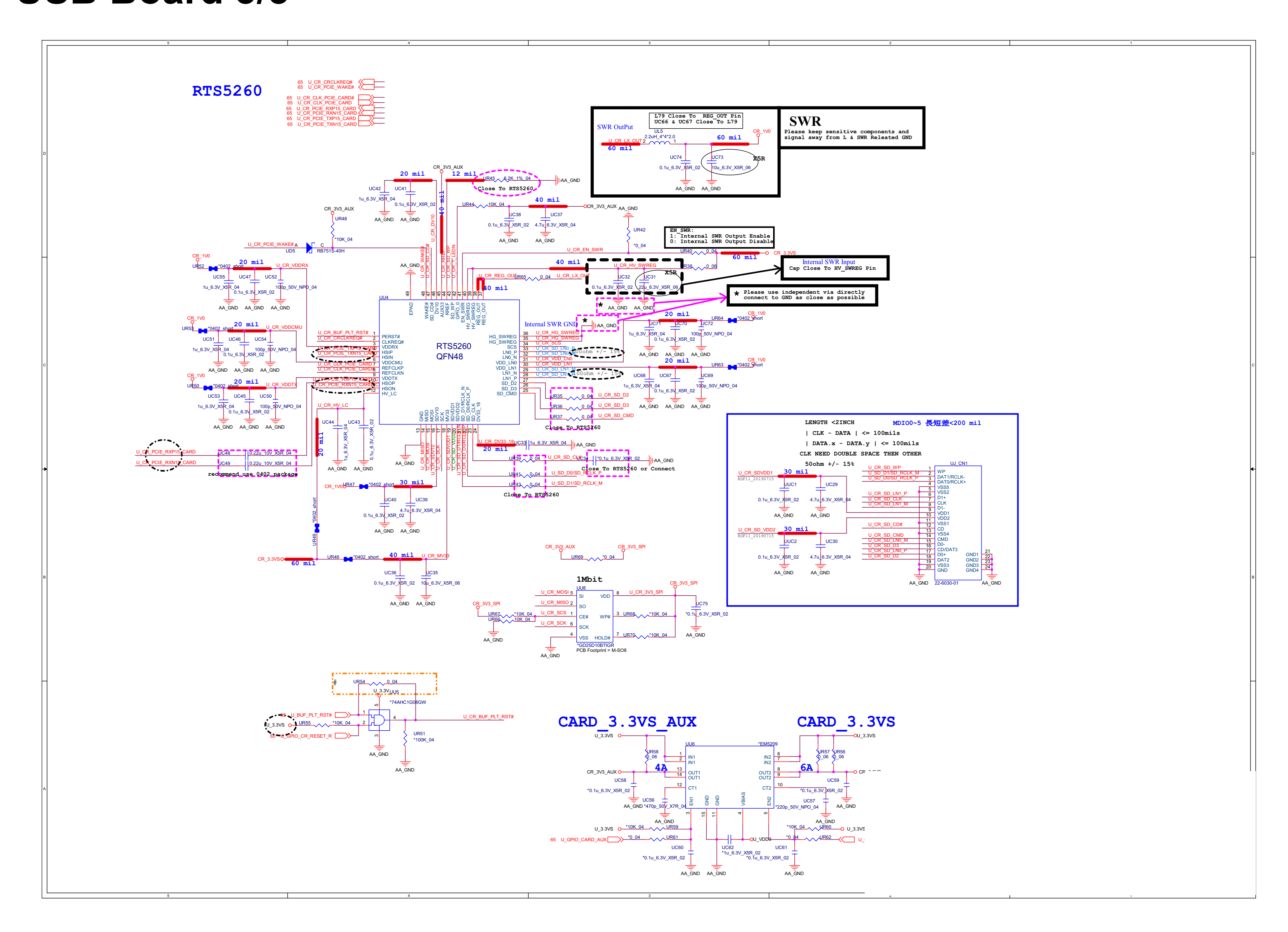
Sheet 64 of 71
USB Board 1/3

USB Board 2/3

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USB Board 2/3



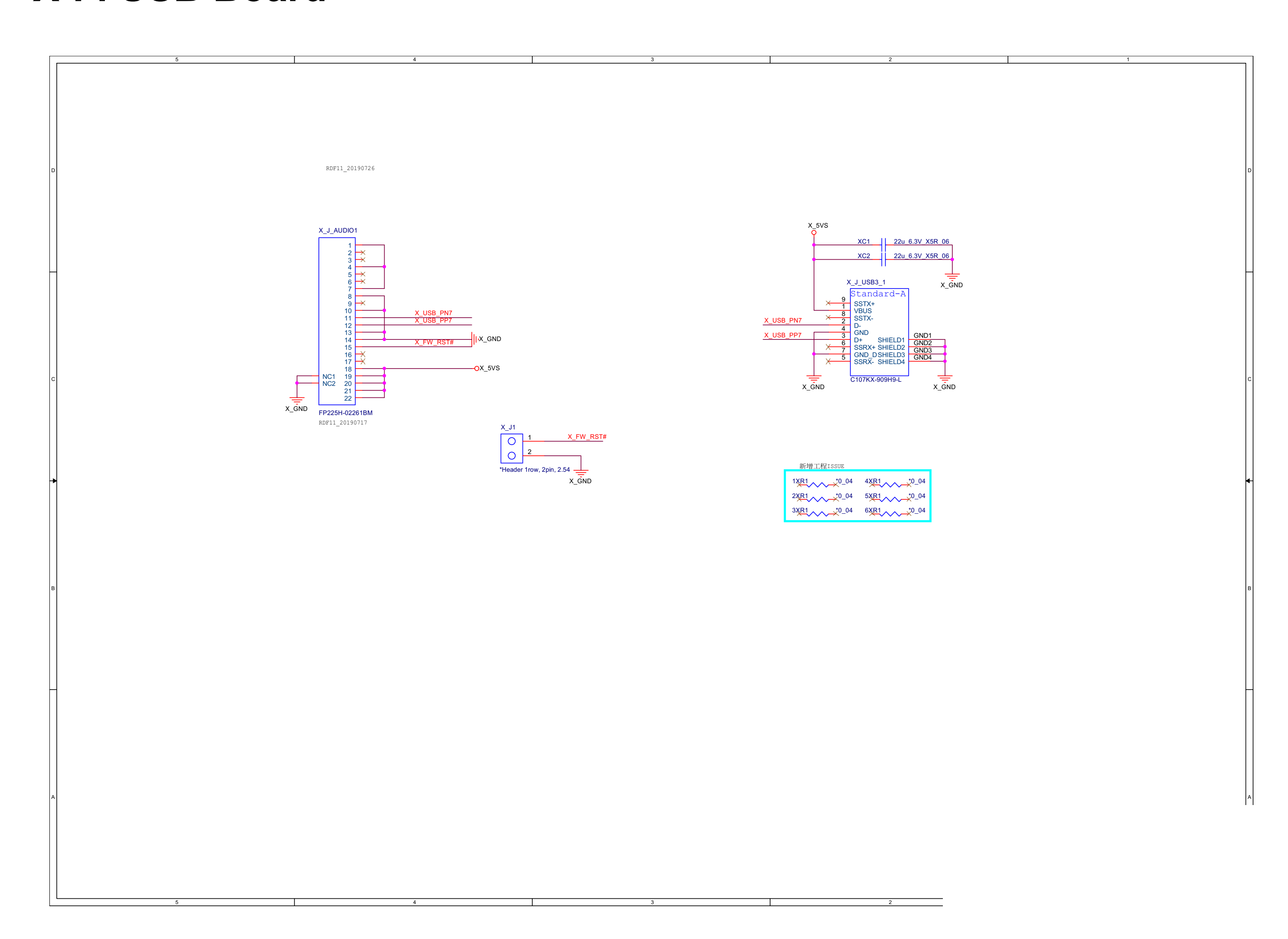
USB Board 3/3



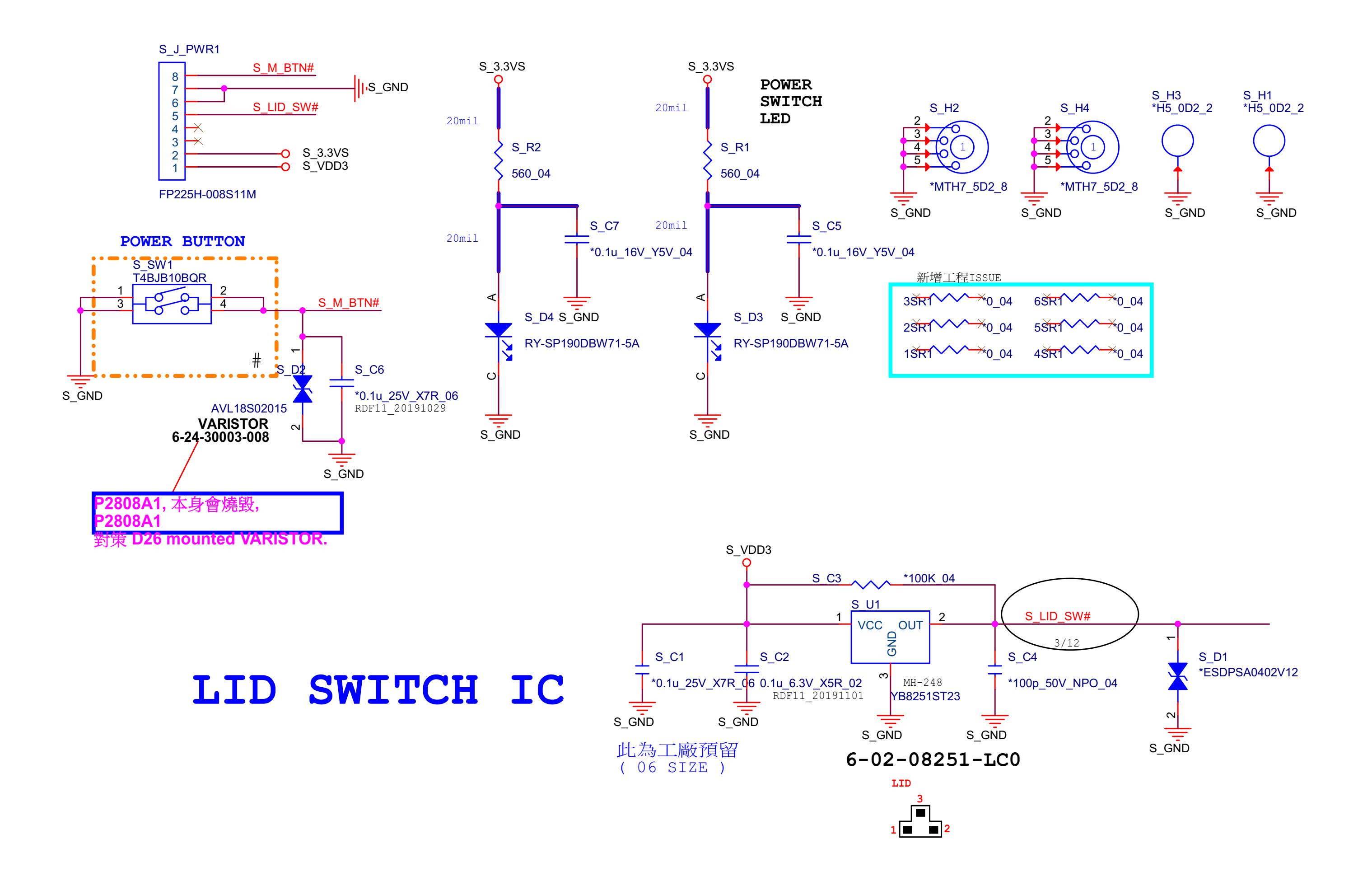
Sheet 66 of 71
USB Board 3/3

X-Fi USB Board

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X-Fi USB Board



Power LED Board

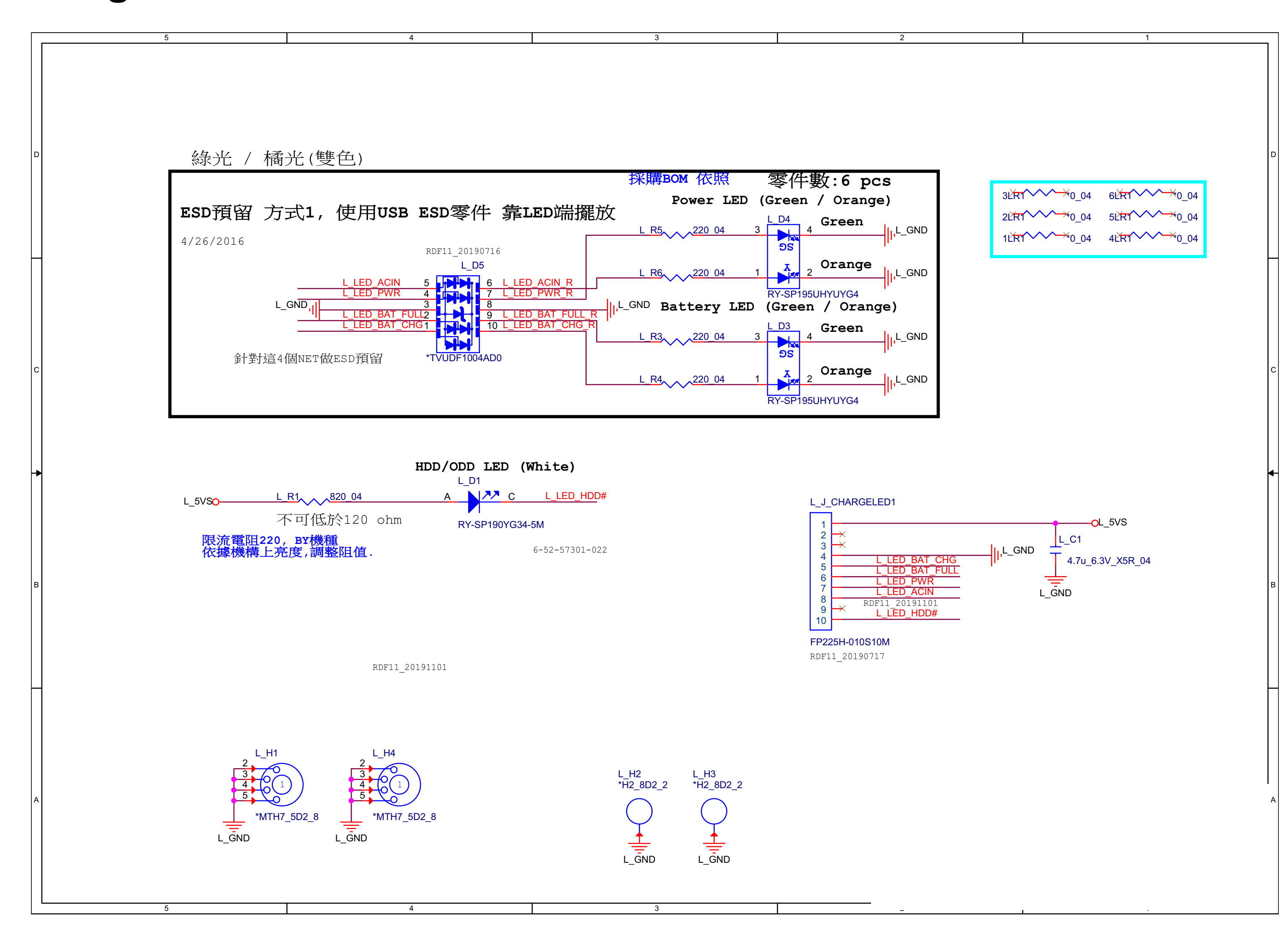


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Power LED Board

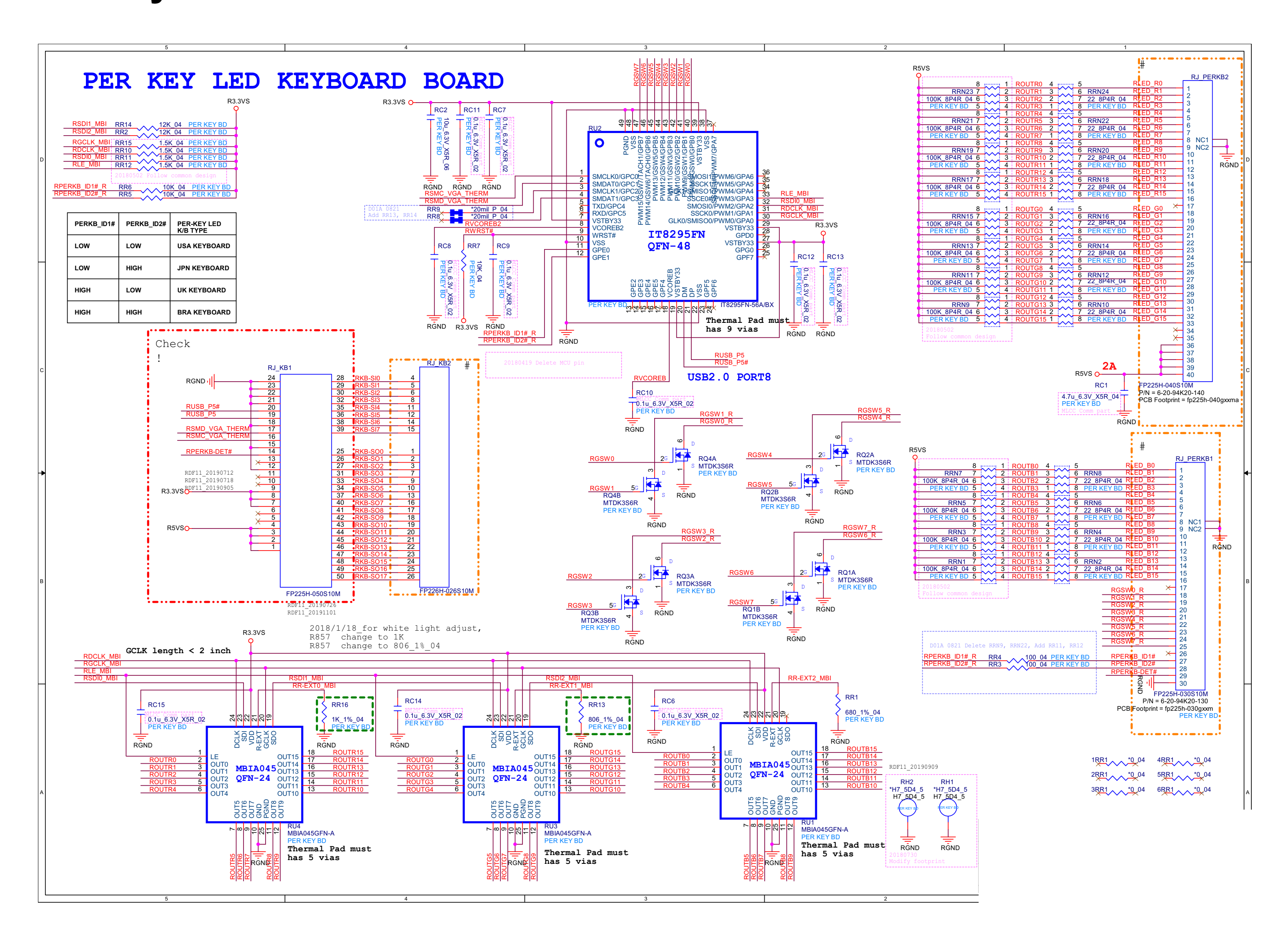
B.Schematic Diagrams

Charger LED Board

Sheet 69 of 71
Charger LED
Board



Per Key Board



PERKB_ID1#	PERKB_ID2#	PER-KEY LED K/B TYPE
LOW	LOW	USA KEYBOARD
LOW	HIGH	JPN KEYBOARD
HIGH	LOW	UK KEYBOARD
HIGH	HIGH	BRA KEYBOARD

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Per Key Board

Power Sequence

Sheet 71 of 71
Power Sequence

